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ABSTRACT

The monograph presents eight articles concerned with research, collaboration, and development of alternatives for skilled technical education for those underserved individuals now exiting the educational system ill-prepared for careers. The first two articles present a statement of the educational needs of individuals who are mildly-to-moderately handicapped and other underserved populations. The term "underserved" is defined, the implications of inappropriate curriculum are discussed, and workplace and legislative attitudes that hinder successful transition are reviewed. The third article describes government, education, and industry linkages required to meet the demand for technologically-trained entry-level employees and emphasizes the potential value of the currently underserved to the economy. The next three articles present the efforts of the Center for Base Technical Education and Transition including a description of the Center's activities, the use of assessment, and a basic skilled-technical curriculum generated by the Center. The final two articles present strategies for interagency cooperation in transition programming and describe an instrument designed to assess the level of interest that regular and special educators have in providing this support. Paper authors are: Mary Buchanan, Sherri Strawser, Clifford Crelly, Carol Weller, Donna Wandry, Cheryl Frederickson, Barbara Gibbons, Lisa Sosa, Marshal Welch, and Suzanne Wade. (DB)

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BASE TECHNICAL EDUCATION

AN ALTERNATIVE FOR UNDERSERVED POPULATIONS©

Center for Base Technical Education and Transition

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Base Technical Education:
An Alternative For Underserved Populations

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PREFACE: EDITOR'S NOTE

A significant number of individuals exit our educational systems underserved and ill-prepared for careers. For them, life promises little more than a minimum existence. The purpose of this monograph is to present alternatives of skilled technical education that teachers, administrators, vocational counselors, and underserved individuals can use to increase career options. Offered by the International Division on Career Development of the Council for Exceptional Children and the Center for Base Technical Education and Transition at the University of Utah, this monograph presents research, collaboration, and development articles that describe these alternatives for underserved populations.

The articles in this monograph encompass four areas. The first two articles present a statement of the educational needs of individuals who are mildly-to-moderately handicapped and other underserved populations. Within these articles, the term "underserved" is defined, a discussion of the implications of inappropriate curriculum for these individuals is provided, and a description of workplace and legislative attitudes that hinder successful transition are presented.

The third article emphasizes the social-economic need for preparation of underserved individuals to constitute the qualified skilled technical work force. In accordance with the National Science Foundation, the Youth 2000 Program, and the National Task Force on Women, Minorities, and the Handicapped, the article describes government, education, and industry linkages required to meet the demand for technologically-trained entry-level employees.

The next three articles present the efforts of the Center for Base Technical Education and Transition that meet the educational and employment preparation needs of the underserved population. The first describes the Center and its activities. The second discusses the use of assessment to meet employment needs. The third describes a basic skilled-technical curriculum that has been generated by the Center and field-tested in the schools to incorporate educational and industry needs.

The final two articles address the need for effective collaboration. The first article presents strategies for interagency cooperation in transition programming. The second article describes an instrument designed to assess the level of interest that regular educators and special educators have in providing this support.

The monograph was prepared by Center participants using information contributed by education, industry, government, and legal fields. Grateful thanks are extended to those who have been involved in the production of this publication, particularly the contributors who worked diligently to provide quality manuscripts. Sincere appreciation is given to the manuscript reviewers - Mary Jean Burkhart, North Dakota; Janet Callahan, Massachusetts; and Addison Watanabe, Florida - for their insightful comments, criticisms, and suggestions.

Donna L. Wandry
Editor

THE UNDERSERVED POPULATION: TRANSITION INTO THE WORKFORCE

Mary Buchanan, Ph.D.

Transition training is viewed by the United States Department of Education as the major shortcoming of our current educational system (Will, 1984). Transition includes a constellation of services and experiences that extends beyond high school to include post-secondary educational settings and initial employment. Transition attention has focused recently on the underserved population, a group characterized as unemployed, underemployed and uneducated. The underserved population includes individuals who are severely disabled and those who are at risk for teen age pregnancy, substance abuse and failure to complete high school; students with mild learning and behavior problems, students with special needs, underachievers, and those who have experienced deprivation. These are individuals whom the system has failed to accommodate transition into society. They lack the basic technical skills needed to adapt to changes in the workplace. They lack the skills to set and achieve long range goals. The purpose of this article is to describe: (a) the underserved population, (b) the range of programs for the underserved students, (c) and issues related to developing transition programs.

Population Description

The underserved can be grouped into two major categories: dropouts and non-college bound high school graduates who are chronically unemployed or underemployed. Among youth who do not graduate from high school, 25% are predominantly poor, are from ethnic minorities and lack proficiency in English (Council of Chief State School Officers, 1987). Dropouts are more likely to be males, bored, from single parent homes, and have parents who are not high school graduates themselves (Kunisawa, 1988). However, the majority of dropouts are Caucasian. Thirteen percent of the 16-19 year-old dropouts are Black, 12% are Hispanic and 75% are Caucasian, according to Gary Wehlage, Associate Director of the National Center on Effective Secondary Schools (cited in O'Brien, 1988). These figures include 87% of the teenage mothers (Kunisawa, 1988) and 30% of students served in secondary special education programs (Edgar, 1987). Over half of all dropouts are unemployed (Kunisawa, 1988); many are ethnic minorities.

Another 20 million youth in their late teens and early 20s forego a college education for such reasons as lack of resources, skills or necessary guidance. These are youth who flounder for several years in low-paying jobs that do not enhance career opportunities, according to Harold Howe II, former U.S. Commissioner of Education and chair of the William T. Grant Foundation's Commission on Youth and America's Future (1988) that prepared the report, *The Forgotten Half: Non-College Youth in America*. These youth are described as hard workers "scrambling to succeed," often working two jobs and delaying life goals. The positions these individuals would seek normally in manufacturing, agriculture and transportation are quickly disappearing, and they lack the basic technological skills to compete for new jobs being created due to scientific advances.

The total number of chronically unemployed and underemployed is unknown. They accept part-time short-term employment when available but fail to acquire skills and work habits to make them stable, long term employees. The skills they have acquired are obsolete and retraining is not readily available. Chronic unemployment often begins in adolescence, thus increasing the possibility of long term unemployment and/or low paying jobs (Flakus-Mosqueda, 1987). Many are female, single parents who live below the poverty line.

Transition Programs

To address the needs of the underserved in today's society and in the next century, transition models must be both comprehensive and futuristic. Traditionally, job preparation education for the underserved populations provided in public schools has been criticized as narrow in scope, lacking the breadth to accommodate the diversity of the group, and contributing little to addressing the aspirations of the individuals. Career/vocational programs for this population should have the breadth of those that serve the larger population and span the life cycle from infancy to adulthood. This is particularly important since the demographics of the United States are rapidly changing. By the year 2000, one-third of all Americans will be non-Caucasian; 59 percent of all 18 year-olds will have lived in single parent homes (Hodgkinson, 1985).

Many transition models have emerged that address the needs of various subgroups of the underserved population described in the previous sections. At least one recent study found major differences in employment rate, engagement rate (defined as working and attending school simultaneously), and dropout rate among selected subgroups of underserved students (Edgar, 1987). If the subgroups of underserved are different, do they have different needs that require different educational programming? Given the diversity of the population, what are the levels of aspiration? Cognitive competence? Experience and knowledge bases? The challenge of transition specialists is to design model programs that are flexible and comprehensive enough to meet the needs of this heterogeneous population from preschool through adulthood. To attempt to address these needs, various programs have been developed such as early intervention,

basic skills education, English as a Second Language, counseling, career education and on-the-job training.

A review of current models, nationally, reveals a range of programs from preschool education to the retraining of adults whose skills have become obsolete or who have experienced radical lifestyle changes through relocation, immigration, disability, family or personal trauma and so forth. The scope of these models is described in the following sections.

Early Education

Tomorrow's work force is in kindergarten and preschool today, which is being shaped by today's educational system. Many professionals suggest that transition must begin in the early years and continue beyond high school. In studying dropouts and at-risk youths in high schools, the Committee for Economic Development observed that dropouts may never, in fact, drop in; they are dropouts in first grade. The committee concluded that early childhood intervention is the best investment for our nation's future and economic well- being (O'Brien, 1988). The need for early intervention is also supported by the Council of Chief State School Officers in its policy statement adopted November, 1987.

Nurturing and social bonding are viewed essential to normal growth and development and are seen as lacking for many disadvantaged, potentially at-risk preschool children. Some states have programs for early detection of at-risk children so that structured interventions can be planned. These interventions stress parent involvement, which is a strong predictor of academic success (Shaylock & Lilley, in press). Programs such as the "family school" concept being used in Duluth, Minnesota are aimed at teaching parents better parenting skills to use with their youngsters, who are considered potentially at risk. Parent-child models such as this one are the most common. Parent-school models are used in at-risk youth programs, but parent participation is voluntary and success is limited (Lindner, 1987). Attempts to incorporate the use of parent-school-community relationships are a priority in many states but implementation is in the initial phases.

To retain youngsters longer, schools must be more flexibile with their teaching methods, recognizing that individuals learn in many different ways. To bridge this gap, some early intervention programs address academic readiness as well as parent involvement. Academic readiness is a component of the HIPPY program (Home Instruction Program for Preschool Children), operating in Arkansas (Isenhart & Bechard, 1987), whereby parents learn to use educational materials with their preschool children. A preschool program in Peru, developed in conjunction with the World Organization of Rehabilitation Through Training, assists poor, illiterate parents in preparing their children for formal education by teaching them parenting skills and educational interventions (Levine, 1986). Numerous educators maintain that many children, during the early school years, need to be introduced to the meaning of work, particularly those who grow up in homes where parents or guardians do not work and for whom role models do not exist (Herbert, 1988). Some programs, such as Gillett's (1978), incorporate this learning experience into the curriculum by stressing work awareness at an early age.

Elementary Education

An argument advanced for an early focus on transition is that much of an individual's ability to benefit from education is contingent upon the knowledge base the individual possesses (Brown, Campione, & Day, 1981). This knowledge base most often is acquired through formal education. If underserved individuals transition from adolescence to adulthood without a sufficient prior knowledge base gained from study in the content areas, they are unable to compete for careers in such fields as science, technology, engineering, medicine and the social sciences. If they do not acquire and use cognitive strategies, they will lack the problem solving skills needed to perform on the job or to confront difficult career decisions. Given the large knowledge base in society today, it is imperative that the underserved are prepared to take full advantage of their formal education.

The primary goal of most programs, for the at-risk students at the elementary school level, is to prevent academic failure or to remediate academic deficiencies. Prevention strategies include program components that teach English as a Second Language, which reduce class size for high-risk children and build on mastery learning. Intervention strategies include literacy programs targeted for the disadvantaged. But across all states, the most common intervention strategy for at-risk students is basic skills remediation (Isenhart & Bechard, 1987). Programs such as special education for students with handicaps and Chapter 1 for the disadvantaged are two common examples. A special basic skills hotline, peer tutors, summer school and after-school sessions are other examples of efforts to develop basic skills and knowledge bases.

Counseling is a priority in many states and begins in elementary schools and continues into the secondary schools. Trained counselors, peers, parents, and teachers counsel and advise at-risk students in accordance with various models being tested throughout the United States. At the elementary level, students from high-risk families (e.g., violence, sexual abuse) are frequently identified for counseling; other programs exist where teachers are trained for an increased role in counseling and advising, where teachers counsel teachers and parents serve as counselors. The primary

goal of counseling programs is to keep youngsters in the educational system by assisting with personal problems and helping them discover the importance of education to their economic well being.

Secondary Education

Secondary education models build upon early development, through education in basic skills and knowledge and career awareness. Career education, with transition in mind, is a major thrust in many secondary programs with some components such as career awareness and counseling introduced in the earlier grades. Career education addresses some potential transition difficulties. Clark and White (1980), Gillet (1978) and Kolstoe (1976) defined career education as a life-long pursuit of information about career goals and options as well as related functional life skills and job characteristics. According to these authors, individuals require at least three stages of career education (career awareness, career exploration and career training) before the repertoire of basic knowledge is sufficient to prepare them for adulthood. Even during adulthood many individuals repeat these stages of career education when faced with job advancement and career change (Bolles, 1985).

Underserved populations require intensive, specialized guidance and instruction in each stage of career development during their school years (Muraski, 1982; Sitlington, 1981) and during adulthood (Weller & Buchanan, 1983). A broader range of models emerges from the secondary school level as the at-risk population becomes older, more identifiable and more vulnerable to dropping out. For example, special curriculums addressing substance abuse, suicide prevention and teen-age motherhood are common. A variety of career exploration and career education programs exist, particularly for the 16-18 year-old youth. One program that introduces younger students to the relationship between school and work is the Occupational Work Adjustment program in Ohio for 14-15 year-old at-risk students. For two years, students divide their time between specialized coursework and employment, usually in an off campus setting, and required coursework. After two years, these students are mainstreamed back into regular programs (Flakus-Mosqueda, 1987).

The single most common curriculum is vocational education which is combined with basic skills remediation (often through programs such as special education and Chapter 1), work skills and on-the-job training. In addition, states are experimenting with incentives such as day care centers, guaranteed jobs upon graduation, family counseling and career-learning centers. Some of the more promising transition programs call for high school partnerships with business/industry and government, allowing students to earn an income while learning. These partnerships provide part-time jobs, summer employment, internships, a guaranteed job or an opportunity to interview for a job upon graduation from high school (Flakus-Mosqueda, 1987). These programs appear to increase self-esteem, motivate students, provide them with long term goals and increase school attendance (Herbert, 1988). Work skills such as responsibility, punctuality and discipline are taught. Students learn the expectations of the working world. Placement services in the high schools help students with job search skills such as job availability, writing resumes and interviewing.

Conclusion

The problems of individuals who are chronically unemployed and underemployed are complex and remain largely unresolved. Changes in life style associated with the demands of employment, reemployment and independence can create a "psychological transition" as a direct consequence of changes in behaviors, relationships and routines (Flamer, 1985). Career education must span the life cycle in order to adequately prepare underserved people to cope in society.

The Department of Labor study, *Workforce 2000*, revealed that a majority of new jobs in the future will require postsecondary education. The opportunities for at-risk youths who are non-college bound will decrease dramatically. Robert Solow, 1987 Nobel Memorial Prize winner in Economic Science, demonstrated through his analyses the importance of technological change in the development of economies. Implied in Solow's work is the growing breach between those who are prepared to work in a technological society and those who are not (Katz, 1988). Employability into the next century will be contingent upon an individual's possession of adequate technological skills.

With disproportionate numbers of adults who are unemployed and underemployed, a clear mandate is evident for validated transition models that span the life-cycle (Gerber, 1986). In that many underserved individuals require specific accommodations to be productive workers in the work force, several questions related to educational and transitional preparation must be posed. Are appropriate identification procedures and programs provided beginning in the early years of a child's life? What are the most appropriate educational alternatives for these individuals? What accommodations must be made by special education and regular education to prepare these individuals for transition? Which educational and transitional methodologies, strategies and training models are most viable? How early in an individual's school career should specific job selection and job training begin? How and by whom should this process be implemented?

Before these questions can be answered appropriately, research questions such as the benefits of early intervention, the relative importance of academic skills for job success, the effect of intelligence and motivation, and the impact of self-image and family support must be empirically investigated. Adaptive capabilities, strength and deficit patterns, and compensation strategies must be explored. Alternative definitions that address the functional as well as the educational needs of these individuals must be devised and accepted.

Unemployment and underemployment are high in the underserved population; the high school drop out rate is unacceptable; job satisfaction is low; and students are opting out or being counseled out of college entry or other post secondary options by high school teachers and counselors (Harris, 1984; Hasazi, Gordon, & Roe, 1985). These data should be a sober reminder that neither research nor practice in transition has reached the level of sophistication necessary to unilaterally accept or employ any transition model without empirical validation and critical consideration of ethical issues.

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PROGRAMMING, ATTITUDES AND POLICIES IMPACTING THE EMPLOYMENT OPPORTUNITIES OF UNDERSERVED STUDENTS: CREATION OF A NEW "NATION AT RISK?"

Sherri Strawser, Ph.D.

A goal of educational programming for secondary-age students is that these individuals make the transition to adult life and become self-supporting, contributing members of society. For most, the attainment of this goal is reflected in their ability to obtain a job upon leaving educational programming, and change jobs as they progress in their employment careers. On the surface, this goal appears reachable because anticipated demographic changes over the next thirteen years predict the availability of a job for every qualified youth who wants one (Department of Health and Human Services/Department of Labor, 1987). The critical portion of this prediction, however, hinges on the term *qualified*.

Parents and educators have become more concerned about the future of secondary students entering the workforce once they graduate or leave school programs (Chesler, 1982; Flamer, 1985). This concern is well founded because over half of the prospective employees who leave public educational programs each year are unprepared to enter employment (Bowe, 1984). Weller (1987) estimated that approximately 60% of the students who leave or graduate from high school have been "underserved" by the educational system to the extent they do not possess sufficient math, science, reading, communication, and adaptation skills to complete the transition from school to employment in advanced technological industries.

Of the total population of secondary-age students, those who pursue higher education programs account for 20% of the student population. Ten percent either choose not to be employed or not to pursue further training following high school. An additional 10% represents the students who require a supported work approach to competitive employment. This program emphasizes structured assistance in job placement, job site training, and job follow-up to assist individuals to obtain and maintain jobs (Wehman, Kregel, & Barcus, 1985). Although many students graduate from high school and obtain jobs applicable to their abilities and skills, the significant majority falls within the category of the systemically underserved. This category consists of the students identified as mildly to moderately handicapped during their school years, and the students who become functionally handicapped after leaving school when it is evident that the regular education, academically-oriented core curriculum has deprived them of the base technical skills required for entry into the work force.

During their school career, approximately 20% of this group of underserved students are classified as mildly to moderately handicapped and placed in resource rooms and mainstream programs (Buchanan & Wolf, 1986). Another 20% are placed in English as Second Language (ESL) programs or alternative high school programs. The remainder of the underserved receive all of their instruction in regular education programs. This proportion includes the 15% of the student population who have been described as slow learners or below average in ability. Although these students are not eligible for special education, they become underserved because they cannot keep up with the academic requirements of regular education without special attention.

An examination of the employment outcomes of the underserved group indicated that, following school, only 30% of the underserved population identify themselves as handicapped or as needing some type of service to become or remain employed. Those who possess so few skills that they are considered unemployable account for 10% of the group. The remaining 60% are considered underemployed (i.e., employed, but in jobs that pay only minimum wage and require few or no skills) (Crelly, Weller, & Frederickson, 1987). In addition, of the 10% who do not choose to enter into employment upon completion of high school, over half enter at a later date, but find their skills inadequate to meet their needs in an industrial society (Gerber, 1986).

The Problem

In 1983, the National Commission of Excellence in Education published *A Nation At Risk*. The report expressed alarm at the "deterioration" of academic study in the nation's secondary schools, and called for the strengthening of requirements in basic academic subjects and reductions in nonacademic extras (e.g., credits for work experience outside school, remedial math and English, personal development courses). Four years later, U.S. Secretary of Education William J. Bennett proposed that substantive expectations and rigor be added beyond the standards called for by*A Nation At Risk*. In a document entitled *James Madison High School: A Curriculum for American Students* (1987), Dr. Bennett proposed that the core curriculum for all students emphasize arduous courses in literature, social studies, advanced mathematics (e.g., solid geometry, trigonometry, statistics), science, and foreign language. Although he stated: "among individuals, preparation for high school differs, as do intellectual ability and academic prowess" (p. 4), he suggests the direction for reform should be a uniform and demanding academic program to provide every student with "equal opportunity in school" (p.4). In an institution already plagued with a 30% drop-out rate, this appears to be an oxymoron.

Bennett's proposed curriculum for all students parallels the traditional college preparatory curriculum, and does not appear to represent a radical change in the educational process or adequate preparation for the marketplace in the years ahead. Through 1995, a four-year college degree will be required for 25% of the 20 fastest growing occupations and 12.5% of the 40 occupations which will account for most of the new jobs generated (Silvestri, Lukasiewicz, & Einstein, 1983). Perhaps change should come through providing students access to a set of demanding, but not uniform, programs that could prepare the majority of students for marketable occupations and entry into the community of responsible adults.

Generally, education has oriented instruction in mathematics, science, and technology toward the academically talented (National Science Board Commission, 1983). By focusing on the education of the well-prepared, large numbers of high school students have been ignored and discouraged. The accessible work force has been limited, and the gap between technologies and the public they serve has been widened. During their school years, students who should be prepared for entry level positions in advanced technology industries are usually provided with a diluted version of the college-preparatory academic curriculum. Because this curriculum does not include instruction in the science, mathematics, reading, or technical skills that are basic to entry level jobs in modern industries, these students have become employment risks and financial drains on industry after exiting the public school system.

Recommendations for Change

To impact the future employment opportunities of the underserved population, the following three issues must be addressed: programming, attitudes, and policies. The remainder of this article will focus on an examination of these issues.

Programming

The development of programming geared to enhance the transition of underserved populations into the work force depends, in part, upon the availability of validated assessment instruments and curricula that can be used to prepare individuals for entry level jobs in technological industries. The National Science Board Commission (1983) reported that curricula emphasizing the broad range of necessary mathematics, science, and base technical skills are unavailable in the schools. Without the systematic development and implementation of such curricula, education will be unable to initiate programs to improve the employment opportunities of the underserved population.

To address this part of the problem, the Center for Base Technical Education and Transition at the University of Utah reviewed transition programming for information regarding curricula and assessment instruments appropriate for use with the underserved population. Although systematic transition models and programs for individuals who are handicapped exist (Leach & Harmon, 1987), the majority (83%) were designed for those with severe handicaps and emphasize supported employment. Three states addressed students with mild handicaps in the workplace; however, these programs emphasized job specific training (usually in service-oriented jobs) rather than generic training in the range of skills needed for job entry and movement in advanced technological industries. Only one program was coordinated with the needs of industry, and no programs differentiated training for the variety of handicapping conditions and subgroups within handicapping conditions, or contained sufficient breadth to cover the needs of the variety of individuals that comprise the underserved population. Given that no programs had been developed to meet the goal of preparing both those who are mildly handicapped and underserved populations for entry as educated, skilled, and adaptable employees of the advanced technical workforce, new programs and new models were developed by the Center. A description of these models and an implementation project is described elsewhere in this monograph.

Attitudes

Over the next 10 years, more money must be directed toward educational programs that train skilled and adaptable workers, and less for retraining and rehabilitation. If these funding reallocations are to occur, attitudes of legislators and the general public must change in several ways.

First, attitudes must shift away from training all students for higher education after graduation. Rather than assuming the goal for all high school graduates is college attendance, the assumption the goal for most is competence in job-oriented technical skills must be fostered. The blue-collar artisan provides the effort and expertise vital to the translation of technological ideas to technological realities. The attitude that positions in technological industries can only be obtained by those possessing a college degree (i.e., the scientifically and mathematically elite) must be altered to view technology as a goal available to all students.

Second, the differing attitudes commonly held about various subgroups that comprise the underserved population present barriers. Some are perceived as better than others, even when facts indicate otherwise. As an example, a recent survey found that managers generally rated elderly people and minority groups as more likely to be considered an excellent source of employees than people with handicaps (Harris & Associates, 1988); whereas considerable literature exists that supports the excellence of persons who are handicapped as employees (Paine, Bellamy, & Wilcox, 1984). In the effort to improve the employment outcomes of the underserved, the disparity among attitudes must be addressed.

Third, attitudes about how individuals who are handicapped fit into the underserved population must be examined. At the present time, most of the legislators, government leaders, and general public view all individuals with handicaps as those who have obvious and intrinsic deficiencies. If individuals are not blind or deaf, confined to wheelchairs, or maintained by life-support systems, they are not considered handicapped. Society in general, and government in particular, must realize that enormous numbers of its members possess "invisible" handicaps, such as learning disabilities and behavior disorders, or are handicapped by the system (Senf, 1986; Weller & Strawser, 1987). As such, attitudes must be altered before any revision in the policies that govern the system can occur.

Policies

To achieve the goal of successful transition of the underserved into the work force, policies which articulate and define the goal must be developed and implemented. Policy needs cannot be assessed unless one knows what current policies exist. Therefore, it is critical to identify existing policies and relevant laws and regulations that affect base technical education and transition. This task is immense because of the myriad of governmental agencies, education specialties, private sector organizations, and lobbying or advocacy bodies that are concerned with the education and employment of persons who are underserved.

Organizational behaviors may have little to do with existing policies. In complex systems, policies may be circumvented or ignored (often for good reasons), and the structure of organizations or their methods of operation may be inconsistent with policy mandates. By studying existing policy, one can determine how things should be. By studying the structure of organizations and their influential members, one can determine how things are.

Political policy, as reflected in special education legislation implemented at the national level, significantly impacts policy at the state and local levels and serves as the foundation for policies to be developed for underserved populations. Those with enabling implications (Sections 503 and 504 of the Vocational Rehabilitation Act of 1973, Public Law 94-142, the Job Training Partnership Act, and the Carl Perkins Amendment) are summarized as follows:

The Rehabilitation Act of 1973 (Public Law 93-122) represented a historic step to provide employment opportunities to individuals who are handicapped. Section 503 of the Act states that any employer receiving federal assistance in the form or contract of $2,500 or more is required to develop an affirmative action plan to recruit, hire, train, and advance handicapped individuals in employment. Employers receiving federal contracts for $50,000 or more and having 50 or more employees must not only develop and implement a plan, but also review and update the plan annually. Section 504 of the Act states that the plan must include "reasonable accommodations" for workers with handicaps. Specific changes in the work environment must be made and discrimination is not allowed in hiring, training, advancement, and retention. In total, the Rehabilitation Act of 1973 is a civil rights act that guarantees equal rights and equal responsibilities for individuals who are handicapped.

Although Sections 503 and 504 of the Rehabilitation Act addressed the civil rights of all individuals who are handicapped, it was interpreted more for employment purposes than educational ones. Therefore, in 1974, Public Law 94-142 was passed to provide a free and appropriate public education to all individuals who are handicapped. According to the regulations promulgated for this law, this includes all individuals of school age who have impairments or conditions of speech, hearing, visual, orthopedic, cerebral palsy, epilepsy, muscular dystrophy, multiple sclerosis, cancer, diabetes, heart disease, mental retardation, emotional illness, and specific learning disabilities. Since the passage of the law, persons who are alcohol and drug addicted, victims of head trauma, and children who are handicapped and youth in custody have been included in the regulations.

The Job Training Partnership Act of 1982 (Public Law 97-300) was passed by Congress to replace the Comprehensive Employment and Training Act (CETA) and increase the role of private business and industry in the training and employment of disadvantaged youth and adults. The purpose of the Act (known as JTPA) is to establish programs for basic job training, training services for the disadvantaged, and employment and training for dislocated workers. Although individuals with handicaps and who have physical and mental disabilities that constitute or result in a substantial handicap to employment are excluded by the Act, JTPA services are often used for individuals classified as learning disabled, emotionally disturbed, speech handicapped and mildly mentally retarded.

The Carl Perkins Act (Public Law 98-524) extends the vocational education laws (Public Laws 88-210, 90-576, and 94-842) to make vocational education programs accessible to all persons including those who are handicapped and disadvantaged. The purpose of the Act was to improve the quality of vocational education programs to give the nation's workforce the marketable skills needed to improve productivity and promote economic growth. In the Act, set-aside funds for specific populations are mandated in the following proportions: handicapped, 10%; disadvantaged, 22%; adults in need of training or retraining, 12%; and others (e.g., single parents, homemakers, criminal offenders, and individuals participating in programs to eliminate sex bias and stereotyping), 13%. The remaining 43% of the funds may be discretionary within the state.

In order to examine the process of implementation of these policies, it is necessary to describe their

interaction related to underserved individuals. This leads to the recognition of three major difficulties. First, the school age is defined as 3-21 for students with handicaps and 5-18 for the nonhandicapped. Second, the funding sources and legal mandates define clearer differences between those who are handicapped and the disadvantaged populations than actually exist. Third, the term "underserved" is used in all four pieces of legislation, but means something different in each.

P.L. 94-142 states that education must provide employment preparation for all children and youth who are handicapped while they are in school, but vocational education is provided only by Carl Perkins. If students stay in school until 21, or if they graduate or drop out at earlier ages, it is intended that the Rehabilitation Act of 1973's regulations and those of JTPA will begin at educational exit. Although it is not mandated by any of the laws, education, vocational education, and rehabilitation are encouraged to work together to provide services to those who are handicapped and those disadvantaged individuals of all ages.

If the laws are interpreted to mean that individuals who are mildly handicapped and those disadvantaged individuals constitute the underserved population, then all four laws become enabling legislation. However, all agencies do not interpret the laws the same way. Vocational rehabilitation interprets that all persons with handicaps and those who are disadvantaged are underserved and all underserved are handicapped or disadvantaged. Special education interprets that all individuals with handicaps are underserved, but not all underserved have handicaps. Vocational education interprets that only 10% of their population is handicapped and everyone else is underserved. The Department of Labor (administrators of JTPA) does not deal with individuals labeled handicapped, but interprets the laws for all individuals they can label as underserved. As a result, finding the vehicle to provide services to underserved individuals is often an experience in policy maneuvering.

Conclusion

A study of the members of the American Management Association (Ruffner, 1981) identified the lack of marketable skills and poor job preparation as major factors hampering the employment of persons with mild handicaps and underserved persons. The study further revealed that many of the underserved students had received some type of specific job training, whereas employment demands were for individuals with technical training that is transferable between entry-level jobs in technical fields. Mikulecky and Strange (1982) asserted that providing functional, technically-based literacy skills to students increased their entry-level skills and retention rates above that of students trained with a traditional core curriculum.

The reduction of the relative number of youth combined with growing fiscal conservatism, greater emphasis on productivity, and emergence of many high-technology industries will create an even greater demand for skilled labor (Sarkees & Scott, 1985). Although there is support for the assumption that the availability of properly educated employees for entry-level positions would reduce industries expenditures for non-specialized training and adult service system expenditures for job retraining substantially, statistics are not available from which to draw conclusions. However, one can project that the impact on the economy would be remarkable. In addition to the benefits to established industries, new companies would be drawn to states that provide students with such training because of the availability of a qualified advanced technology labor pool.

If we meet the goal of providing generic base technical education and transition training to individuals who are handicapped and underserved for future employment in technological industries, the implications will be felt on a national as well as state level. Innovative developments in curriculum, assessment instruments, instructional products and materials, policies, and policy research can all contribute to the upgrading of the employment opportunities of the underserved population. As innovations are developed, produced, and disseminated nationally, it is hoped that their impact will be felt by all teachers, administrators, government leaders, and industry executives concerned with the education and skills of the nation's work force.

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TOMORROW'S WORK FORCE: A CRISIS FOR INDUSTRY, EDUCATION, AND GOVERNMENT

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Until recently the majority attitude among parents, teachers, government entities, and employers was for an individual to gain success, a college education should be achieved. However, it is becoming evident for a conservative 20 million 16 to 24 year olds, college is far from the best means of developing tomorrow's labor talents (Grant Foundation, 1988). These individuals make up the underserved populations; that is students and adults who are mildly to moderately handicapped, those from ethnic minorities, women, and other individuals who do not and cannot benefit from the standard college bound curricula being offered in the public educational system. Underserved individuals are at present locked out of semi-advanced salaried positions and are forced to accept minimum wage service and retail jobs, which should be occupied by those who are more severely handicapped. This common situation is forcing the underserved into underemployment and persons with severe handicaps to sustain themselves either through help from relatives, government subsidies or both.

Unfortunately, American industry, government, and education will continue to lose its preeminence unless women, minorities, and those who are disabled are lured into appropriate scientific and technological arenas. Jaime Oaxaca, Co-chairman of the Task Force on Women, Minorities, and Handicapped, stated that, "people do not consider this a glamorous issue, because it's a long-term deal, but I think it's a national crisis" (Adler, 1987, p. 27). Although in 1899. Every day new, exciting, and miraculous ways are found in which technology can improve our lives, increase our standard of living, and transform what was an extravagance yesterday into a necessity today. In order for technology to maintain this pace, it must have available skilled base entry employees or face the inevitable fact that growth and expansion will be severely restricted. Today's primary factor in the creation, expansion, and especially the location of new or existing corporations and government contracts is the availability of a viable, cost-efficient work force. According to a 1987 press release from the Task Force on Women, Minorities, and the Handicapped in Science and Technology,

> ..."it is crucial to our future that the United States remain in the forefront of science and technology. We can only accomplish this goal by encouraging and enlisting the diverse and creative energies of every segment of our population" (p. 14).

It still is true that for the sake of self survival, there must be a collaborative "invest in the future" attitude. This attitude must rest on the education, training, and transition of today's youth from secondary and post-secondary education systems to industrialized employment. Industry, government, and education must join forces to discover new and innovative avenues by which underserved American youth and young adults, who are not in the minority, college-bound elite, will possess the knowledge, skills, attitudes, and behaviors required to enter into the ever expanding industrial sector.

Industry's Crisis

Between now and the year 2000 the United States will experience a drastic decrease in the number of persons in the basic work force, especially in those positions that require some skilled qualifications to support, maintain, and expand existing and created public and private enterprise. The primary cause of this decrease is based on what has been called the "birth dearth." American families are having fewer children. To meet the plethora of industrial discoveries, as the baby-boom era terminates, all graduating secondary students and displaced adults must be trained, skilled, and educated in areas that transcend the traditional college-bound curriculum. A slower growing population base is thrusting the country into a period of labor scarcity as the birth-bust generation approaches adulthood.

To further accentuate the problems facing our nation are several other variables that must not be ignored. These include: (a) a decline in future work force-age populations that must support our retired citizens and the social security system, (b) increased numbers of school drop-outs who are not trained to enter industry or advance into college or training institutes, (c) increased tax roll membership and decreased tax revenues, and (d) threats to national security and economic growth. Besides these obvious crises that face our nation, there are multiple splinter problems such as teenage pregnancy, the rising crime rate, drug abuse, suicide, poor self and community esteem, national apathy, and retardation of scientific and technological progress. In addition, third-world unrest, the Asian/U. S. trade imbalance, and the acquisition of high-tech by second-world nations exacerbate the problems to an intolerable degree. To maintain U.S. hegemony, between now and the year 2000 the majority of American electronic and scientific acquisitions and expansions must be limited to the mainland of the United States and its outlying territories.

The concept of internal self-sufficiency becomes even more important from a military point of view. Millions of American youth will be required to defend our country using high-tech equipment and scientific applications. Since there no longer exists, nor appears to be a need for a military draft, the bulk of service persons will come from the ranks of the underserved. According to Sticht, Armstrong, Hickey and Caylor

(1987), "the poor performance of young people on the military's 'mental quality' tests of the 1980's...has signaled the need for new approaches to youth employability" (p. 42). These authors expressed a need for curriculum where basic skills (electricity and electronics) were integrated with the regular curriculum in a manner that developed literacy for reading technical orders and math concepts for functional context. If education is to meet these needs, it must curtail the myth of success only via a college degree, create strong and lasting linkages with technological producers and consumers, and establish alternatives that will allow the underserved population to enter the scientific-technological community, either as base entry workers or as advanced contributors.

Education's Dilemma

One of the major factors to which education must respond is the problem of what is being taught in public schools versus what employers view as the required attributes of employees entering rapidly growing industries. Only by strong commitment to unique educational programs and broad based emphasis on technical training will a solution be forthcoming. Old programs of short-term, vocation-specific training will not meet these goals. Ryan and Furlong (1975) concluded that most of these programs are too short-term (16-20 weeks) and result in a mere 1.5 to 2 grade level improvement. Only with long-term, broad-based, multi-aged, multi-population, and specially targeted alternative curricula and educational options can the youth of today acquire the functional requirements to be employable tomorrow.

Currently, vocational training is a limited alternative to addressing employment problems and solving the labor problems of tomorrow. To rectify this situation, education must develop programs that train a broad range of skills and focus on attitudes that facilitate transition to laterally and vertically mobile positions in base technical industries. These programs must incorporate base technical assessment and instruction with traditional curricula aimed at employment. The programs must create new methodologies that will interest and encourage underserved persons to maintain and further their development and involve them in science, engineering, and technology. The programs must be implemented in collaboration with highly trained and organized industry groups who have the power to maintain long-term employment benefits for both the employer and employed and by special educators who have the expertise needed to promote the educational advancement for underserved populations.

Through collaboration of special education, regular education, vocational services, industry, government agencies, and concerned individuals and groups, a network of curricula and assessment tools can be developed. If these tools are supported by research and disseminated to a national audience, they could be viewed as a catalyst for a continued development agenda of education. With appropriate support and funding for replication of these unique programs, broad economic growth, social and national pride, educational and training linkages, and multi-level/multi-faceted individual and national self- sufficiency can be achieved.

Through direct linkage programs with educational systems, industry can articulate its labor needs, and education can develop the assessment and curricular programs required. Armed with new curricula and assessment tools, education can give underserved populations the means to enter into the industrial work force. With a unified perspective, industries and education can influence government to legislate the need for specific base technical entry level curriculum, training, and transition programs in general education.

Government's Mandate

Industry is giving government a mandate. Due to the constantly increasing costs of base wages, training budgets, remedial education, and productivity, corporate profits have been decreased. Without these required profits industries have experienced insufficient capital for growth, expansion, and development. To gain short-term relief from these problems, industry has tried to develop successful production schemes abroad. This has caused ill feelings and bad faith among U.S. consumers, lower quality goods, lessened U.S. tax bases, a multi-billion dollar trade deficit, and loss of U.S. hegemony. In response to these problems, corporate leaders are pressuring congressional and state legislatures, demanding that coordinated efforts be made in education to meet the educational and employability requirements of the United States. Since these corporations have the means to demand reforms and the clout to be heard, government is listening.

State and national government agencies are realizing that in order for the United States to remain the world's leader in advanced technology, foster national security, and regain hegemony, they must join education and industry to provide the type of innovation required for technological growth. In 1987, the General Session of the Utah legislature passed a joint Utah Work Ethic Resolution (S.J.R. 10) to make the education of all individuals a major state priority. The resolution, reached via numerous hours of collaborative research, expressed an understanding by government that new avenues of education must be searched out and explored to their fullest. The resolution called for measures to encourage training and career identification of students at early ages, create a well-trained

transitional work force, and create high-quality technical employees. The resolution addressed six major needs: (a) more emphasis should be placed on providing technical training opportunities through the public schools, (b) training for vocational careers should start early and students should be encouraged to make decisions in middle school about the type of career that interests them, (c) students should leave school with marketable skills or the ability to make informed decisions about the career paths they wish to follow, (d) public school programs should include instruction in the basic technical skills as well as training for specialized career fields, (e) training should provide students the ability to adapt easily to a changing job market and success in work throughout their lives, and (f) strengthening the Utah work ethic by developing a work force able to perform the jobs offered by changing economy makes the state more competitive in attracting industry. In light of these needs, the legislature encouraged high-quality technical education and supported the goal of building a skilled, educated work force. Further, the Legislature has declared that the priority of education should be to prepare people for work and the Utah State Board of Education and Utah State Board of Regents should implement the principles of the resolution that would lead to a strengthened work force, an improvement in the state's economy, and a facilitation of competition in attracting new business and industry.

The Utah governor's office, after calculating the saving in the Utah tax structure and new revenues that would be gained, lent its support to the resolution. By establishing a task force of industry leaders, heads of governmental agencies, and innovative educators, a tri-power linkage was initiated. Together, this linkage has set goals to achieve the following changes: (a) fewer students dropping out of secondary school and increasing the tax burden, (b) more employees adding to the state's tax revenues; (c) upward mobility of the underserved, (d) more severely hindered individuals occupying service and retail positions and becoming contributors to individual, community, and state coffers, (e) development of a strong, qualified work force that will attract new corporations to establish bases in Utah, and (f) maintaining existing companies where a qualified work pool is accessible.

At the national level, Dr. William R. Graham, Science Advisor to the President stated that "the U.S. now faces international competition in technology which will become more rigorous in the future. This demands that we assure the availability of women, minorities, and the disabled, great pools of talent in the society that are now greatly under-used in our scientific endeavors" (Press Release, Task Force on Women, Minorities, and the Handicapped in Science and Technology, 1987, p. 2). As a result, the National Task Force on Women, Minorities, and the Handicapped in Science and Technology has embarked on a three year program to broaden participation in the sciences and technology and engineering for these groups. The Task Force was charged by Congress with five specific tasks: (a) examine current status of underserved in government and federal assisted research programs, (b) coordinate such programs to promote hiring of underserved person in the sciences and engineering, (c) suggest cooperative interagency programs for promoting such employment, (d) identify exemplary state, local, and private programs that encourage underserved population to acquire and interest in the sciences, and (e) develop long-range planning to facilitate the transition of underserved persons in science and technology. During 1988, the Task Force held public hearings across the country to ascertain the most expedient means by which these tasks can be accomplished nation-wide.

The Utah resolution and the Task Force tasks represent a sharp detour from traditional courses of government action. While encouraging underserved persons to be more involved in the sciences, they express an understanding of the need for established linkages between industry, government, and education. In Utah, persons in industry and government agree that unique programs are required to keep existing companies in Utah and create a competitivene s for attracting new business and technological industry. A key factor is the dollar incentive of industry. Since many individuals and collaborating groups from business and industry lobbied extensively, presented research and facts to the legislature showing that attitudes must be redirected if state growth were to continue, and emphasized that the status quo of college bound education would not meet the requirements for economic and social growth, the State has moved to action. Since these same forces have been brought to bear on a national scale, Congress as charged The National Science Foundation to create new routes to assist underserved populations in the opportunity to enhance their educational/employability levels.

The New Direction

In the past, industry, government, and education, to maintain the competitive edge, have been more concerned with the acquisition of highly trained and educated upper-management and research/design personnel than with the skills, knowledge, attitudes, and behaviors of the entry-level employees. However the current crisis has shown that to survive in our economically and socially competitive world, new directions must be formulated that enhance the quality of the base entry employee. Although advanced education is important, the backbone of success is a qualified work force that will produce the products. This base entry technical work force does and will represent the cornerstone on which a solid foundation of growth and expansion can be built.

Education is accepting its role in exploring new and innovative methods and unique programs that will allow students to aim for successful employment rather than questionable collegiate careers. It is also recognizing that to achieve its goals, all branches of education and training must cooperate. No longer can information, ideas, and program plans simply be disseminated. There must be collaborative exchange. Egocentric territorialization must be eliminated through the process, and special education, regular education, and vocational education must create their own national and regional Task Force that focuses and consolidates resources and personnel. This, in coordination with linkages to industry and government, can achieve the desired goals of technological employment and transition for underserved populations into the scientific communities.

Industry is aware that to have a qualified work force, it too must begin to assume some of the responsibility. In a recent interview with Newsweek, Lewis M. Branscomb, Vice-President of International Business Machines Corporation, voiced industry's desire for innovative programs that specifically address the labor crisis and a willingness to cooperate intellectually and financially with education and government agencies to gain greater freedom for experimental programs. Marc S. Tucker, Executive Director of the Carnegie Forum on Education and the Economy, referring to the actions needed to meet the work force crisis, noted the need to meet a standard of collaboration that has not been met before (Hammonds, 1987).

As business gains a greater awareness of the problems, it will exert influence on government. This will lead to greater cooperation among the tri-power linkage and an acceleration in the movement toward educational/employability solutions. As more states adopt resolutions, such as the one promulgated by the Utah Legislature; as more federal agencies, such as the National Science Foundation and Youth 2000, allocate fiscal resources for research and development of technical programs; and as the Centers of Excellence Programs in various states increase their support for collaborative base-technical education and training, the more substantial the progress toward solving the work force crisis will be.

The most important aspect of the tri-power linkage is that it can create an all encompassing methodology for base technical education and transition programs. Through the methodology, *everyone* wins. The students win by staying in school and learning the broad based qualifications that will enable them to transition into scientific and technological positions. Industry wins by acquiring a well-trained, competent base-technical work pool from which to hire. Industry will also win by saving billions of dollars in education, training, and replacement of employees. State and Federal governments win from new tax bases, advancements in technology, bolstered security, and assured economic/social growth. Education wins by going beyond the status quo and creating optional systems that dovetail with standard ongoing curricula and allow transition and employment for students leaving secondary and adult education and training institutions.

There are numerous advantages to the linkage between the tri-powers, but the bottom line is that the entire nation wins through pride and satisfaction as individuals discover they can become self-sufficient. Parents will see children gain employment in areas other than low-paying, low-esteem positions. Communities will see quality achievements and a decline in delinquency, crime, and poor self-image.

However, without the cultivation and implementation of tri-linkage programs, the system will continue to lose. The best statement of this problem comes from the observations made by the Sticht group in their study of the *Project 100,000*, "So often, in the present as in the past, the solution has been to put youth into make-work programs, programs where a minimum wage foretells a minimum life. Without education, the intellectual knowledge and skills that education develops, dropout students soon become dead-end workers. And, worse yet, the evidence suggests that most of these youth become dead-end parents, whose offspring become the next generation of castoffs."

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CENTER FOR BASE TECHNICAL EDUCATION AND TRANSITION

(A Centers of Excellence Program for the State of Utah)

Carol Weller, Ed.D.

Three years ago, the Department of Special Education at the University of Utah became acutely aware of a critical problem in the field of education. The Department, which had heretofore focused its primary research efforts on the development of teaching technologies for preparation of persons with handicaps for employment, was suddenly confronted with a harsh reality. The low level jobs in business and service that graduates who are severely mentally, behaviorally, physically, and sensorially handicapped could be trained to hold were not available. These jobs were glutted with young adults with high school diplomas who should have been holding jobs in advanced technology industries, but who had insufficient skills to qualify them for advanced positions. Faced with this reality, the Department broadened its focus to apply its proven teaching technologies to these individuals who could be termed "underserved."

Underserved populations consist of that portion of the high school and post-secondary age population whose functional work abilities and basic technical skills do not lead to employability in the technological work force. Underserved populations include individuals labeled as at-risk, mildly handicapped (learning disabled, behavior disordered, or resource), slow learners, culturally deprived, ethnically different, gender minorities, school failures, and drop-outs. These individuals make up approximately 60% of all students exiting high school and entering the work force.

In March of 1987, several members of the Department of Special Education met with the Executive Director of the Utah Advanced Technology Council, a private industry board of executive and corporate officers of technological industries in the state. Together these individuals and faculty from the Departments of Educational Studies and Educational Administration conceptualized and established the Center for Base Technical Education and Transition. The Center set goals to collaborate with Utah industries to research, develop, validate and produce curriculum and assessment products that would have national value for teaching underserved populations. Their goals were based on five premises: (a) educational agencies are industries that produce underserved human products, (b) educational industries require and should be provided validated and proven teaching technologies for the development of qualified human products for advanced technology, (c) special education possesses the teaching technology required by educational industries to produce these human products, (d) special education can effectively collaborate with regular education, educational administration, and industry in the development of the curriculum and assessment products required for developing qualified human products, and (e) curriculum and assessment products developed by the Center can be utilized nationally for teaching underserved populations. For purposes of these premises, the Center proposed the acceptance of the following definitions:

Base Technical Skills: Base technical skills encompass the basic scientific knowledge, manual skills, and functional behaviors that are needed by technological industries and allow acquisition of entry level positions with the probability of horizontal and vertical mobility within industry. Base technical skills are the functional skills of mathematics, science, communication, and reading required for electronic, mechanical, field service, assembly, and quality control positions of shipping and receiving, stores, electronic assembly, general assembly, and product control testing. These skills are augmented by life skills that allow functionalism in a technological work environment.

Transition: Transition is defined as the process of acquisition and development of skills required for an individual to move from the educational setting to the work place. Transition begins early in an individual's educational career and continues as the individual progresses through secondary and post-secondary training. The process of transition is facilitated by specialized curriculum and assessment instruments unique to each step of the process.

The endorsement of the Center's premises and definitions led to the submission of a proposal to Utah Centers of Excellence Program to research, develop, validate, and produce the proposed products. The Centers of Excellence Program is a division within the State of Utah Business and Economic Development Office modeled after the National Science Foundation's University-Industry Cooperative Research Centers Program. Centers of Excellence Program provides funds for research and development based at Utah universities to accelerate the growth of targeted technologies by catalyzing interdisciplinary research within Utah's colleges and universities; stimulate and assist the translation of research products from university laboratories into Utah's economy; and enhance the image of the State of Utah as a center for technological growth and economic development.

On December 24, 1987, the Center for Base Technical Education and Transition received notification it had been selected as the 25th Utah Center of Excellence. Its acceptance as a Center represented the formation of the first Center in the nation to (a) consolidate the teaching technologies researched and developed by special education with the advanced technologies required by industries, (b) develop and produce innovative and unique curriculum and assessment products specifically applicable to teaching base

technical skills to underserved populations, (c) integrate these products into the educational programs of school-age and adult underserved individuals, and (d) maintain and enhance research, development, and transference linkages with industry.

The current research program of the Center involves interaction with Utah industries and educational systems to research, develop, implement, and validate base technical and transition curriculum, assessment, and linkage instruments that can be distributed nationally and to the Utah educational system to mitigate the problems encountered by underserved individuals entering the technological work force. These research and development activities originate with the principal investigators of one or more of the Center's eight divisions or seven professional staff. Divisions and staff positions include the following: Division of Research for Technical Education Innovation; Division of Research in Technical Skills and Adaptability; Division of Research for Regular Education Integration; Division of Research for Industry Collaboration; Division of Research in Transition; Division of Research in Ethnic Instruction; Division of Research in Public Policy Development; Division of Research for Post-Secondary and Adult Transition; Technical Liaison Coordinator; Assessment Liaison Coordinator; Curriculum Liaison Coordinator; Delivery Systems Liaison Coordinator; and Center Operations Coordinator. The Center Directors assist with the transference of these activities into industry and the educational system.

Each principal investigator and staff member has a research agenda that relates directly to Center goals. Specific research and development activities are defined by the particular expertise of these individuals. Through collaboration among these persons and collaboration with industries the Center's development goals are met. Currently, Center participants are providing validated and innovative base technical education and transition research that has resulted in base technical products. These products include, but are not limited to: software, monographs, manuals, procedures, computer instructional packages, and interactive television and video components. Participants are also involved in research concerning the impact on human products which are the backbone of the work force. Integration of base technical products commercialized by Utah industries into the nation's schools; and the use of these products to prepare a cadre of educated, skilled, and adaptable graduates as an available and marketable resource in present and future technological industries is also a focus of the Center's research program.

Research Program

The purpose of the remainder of this article is to present an overview of the research program currently being conducted by the Center for Base Technical Education and Transition. This program has been specifically developed to investigate issues that affect underserved individuals as they transition from school to work, as well as issues that affect their performance in industry positions. The reader should be aware that the issues encompassed by the program are not presented by priority, nor are they inclusive of all avenues of research being pursued or planned by the Center.

Differences among the Underserved

Research conducted by the Center has indicated the incidence of underserved populations in the work force. The research has also provided data to indicate that underserved, mildly handicapped, and culturally different populations are indistinguishable from one another in intellectual, academic, cognitive, and adaptive skills after they enter the work force if their education has focused on a core academic curriculum rather than one that is technically based. Given that significant differences do not exist among these groups of students, transition programs designed for mildly handicapped populations are being validated for underserved populations.

Adaptability

Current research at the Center is providing insight into the adaptive characteristics of underserved adults. Research studies are being conducted that identify the adaptive strategies employed among members of the work force to change their work behavior in response to the work environment and the adaptive strategies used to change the environment to meet their needs. Once these strategies have been concretely identified and evaluated, they will be compiled into an assessment instrument that measures the use of adaptability skills by school-age individuals in grades K-12 as well as those among the post-secondary and adult population. Following production, these scales can be used by education and industry consumers, and their content can be integrated into the curriculum.

Technical Assessment

Investigation is underway to develop and produce an inventory that can be used by educators and industry personnel to identify and assess the relationship of patterns of strength and weakness evidenced by underserved populations to the requirements of entry level positions. This inventory is being developed in such a manner that it will contribute to assessment of base technical curricular needs of elementary and middle school-age students, transitional and technical needs of secondary-age technical trainees, and technical education needs of post-secondary and adult populations.

Technical Curriculum

Evaluation and modification of a curriculum for technical, base technical, and transition preparation of underserved students is a continuing project at the Center. This curriculum, developed in collaboration

with Salt Lake Community High School and the Utah Advanced Technology Council, is described in an article by Frederickson and Gibbons found elsewhere in this monograph. The curriculum, when fully operational and validated will be available for secondary and post-secondary institutions for preparation of underserved youth in transition.

Ethnography

Preliminary ethnographic studies to investigate the technical, base technical, and transition skills required by industry were pursued by Center personnel. These studies provided verification of the factors of base technical skills that are the most significant contributors to success in technical industries through the collection of unbiased qualitative data on skills necessary for specific entry level positions. Ethnographic analyses of entry level positions in three industries have been initiated and will be continued to determine the educational level, base technical skill level, and adaptability level of the workers actually occupying positions such as shipping and receiving, stores, electronic assembly, general assembly, quality control, and product testing. Fieldnotes have been collected to determine the skills required for entry level, base technical positions; the educational level, skill level, and adaptability of current workers; the workers' perceived pre-employment training needs; commonalities in base technical skills across industries and entry level positions; and the manner in which individual strengths and deficits influence vertical and horizontal mobility. From among the necessary base technical skills identified, a weighting system that is predictive of success or outstanding performance will be developed and used to develop assessment and curriculum products that relate to attainment of skills for base technical employment, and facilitate the match of an individual's strengths and deficits with those required by entry level positions.

Preparatory Curriculum

On the assumption that underserved individuals must have certain background skills and functional schemata in mathematics, science, reading, oral communication, written communication, and problem solving before they can profit to the maximum extent possible from a technical curriculum, Center participants are engaged in the research and development of a preparatory curriculum. This curriculum, currently being developed and field tested with 28 underserved students of middle school and secondary-age, teaches those skills in math, science, reading, oral language, problem solving, questioning, and adaptation that are needed by students prior to entering the base technical curriculum. Following replication with additional students, the curriculum will be available for national dissemination and replication.

Preparatory Assessment

During the past several years, a research agenda has been pursued to identify tasks that identify characteristics and strategies for processing information related to readiness for technological learning. The assessment measure being developed from the research includes four tasks: a nonverbal structured task; a verbal structured task; a nonverbal unstructured task; and a verbal unstructured task. The measure yields a product and process score from which to judge an individual's competence in the tasks. The process score reflects a count of behaviors exhibited by the testee while completing the tasks. The product score reflects the quality and quantity of learning components used to complete the tasks. The tasks, originally field-tested with elementary age students, are currently being investigated for use with adults. Preliminary results indicate promise for the use of these tasks to identify patterns of strengths and weaknesses among adults that can be used to guide them into appropriate training for base technical positions and acquisition of jobs in these areas.

Regular Education Integration

Because of the collaborative effort needed to integrate base technical education into the core curriculum of approximately 60% of the students in public school, Center participants are investigating, developing, field testing, and validating an integrated model of assessment and curricular strategies for underserved students in both regular and special education. The model has two primary components: content goals and process goals. Content goals involve the knowledge and competence needed in any particular subject area. These typically include understanding the technical vocabulary of a discipline, attaining a set of conceptual relationships, and being able to use basic tools or instruments. Process goals involve teaching strategies that enable students to become independent learners who know when, how, and why to use a strategy, and who consistently monitor their understanding and strategy use. Although many similarities exist between the model under investigation and existing models used in special education or regular education, the present model is unique because it specifically relates to base technical education and underserved populations.

Industry Collaboration

A primary function of the Center's research program is to investigate mechanisms for providing a more consolidated linkage between education and industry than currently exists. Special education, unlike the majority of regular education, has traditionally been involved in linkages with agencies and adult service providers who offer it guidance about pre-transition needs of students. Until recently, however, industry has shown little interest in formal collaboration. The research and tasks of this agenda are guided by industry and represent a departure from many education programs. These tasks include: (a) a review of the extant literature that deals with industry and public school collaboration in preparing students for entry

level positions in technologically-oriented industries, (b) appraisal of the effectiveness that has been achieved in programs that focus on industry and education collaboration, (c) and identification and analysis of the suitable and effective assessment and curriculum materials that already exist within various industry and public school training programs for base technology training of the underserved.

Transition Materials

Center professionals are currently compiling materials that will facilitate the transference of transition teaching technology that has been developed by special education for populations who are handicapped to the education of underserved populations. Specifically, materials receiving attention focus on teaching and intervention strategies, particularly the concept of supported employment, simulated versus ecological training, and integration. Analysis of materials that encompass interagency agreement documents, task analysis procedures, and a continuum of service delivery for all students requiring base technical, technical, and transition training currently are being developed.

Adult Programs

Educational models that have been successful in developing flexible curricula, testing innovative teaching techniques, and examining teacher training competencies for teaching base technical skills to underserved post-secondary and adult populations are receiving research and development attention. These models include those that encompass a philosophy of pre-technical education being a component of the curriculum from preschool on. Models of particular interest are those that recognize the need for life-long learning and reflect the belief that anyone should be able to learn at any age, particulary in this time of rapid advancement in new technologies; that support the idea that adult education is as critical as the training of young adults transitioning for the first time; that recognize that industrial leaders are being prepared for the present as well as the next century. These models differ in scope and focus and include those from both the United States and abroad, such as the World Organization of Rehabilitation through Training model, which is operating in 34 countries and serving 158,000 students in collaboration with industrial and government leaders throughout the world and the World Bank. Components of these models are being included in the development and implementation of a pilot project at Salt Lake Community College in which the Center, the College, and the Utah Advanced Technology Council will be collaborative participants.

Other

In addition to the programs described previously, Center participants are engaging in research efforts aimed specifically at Native Americans, Hispanics, Afro-Americans, women, Pacific Islanders, and other minorities, and at public policy research and implementation. From these efforts, being conducted in conjunction with MESA (Mathematics, Engineering, and Science Achievement), further collaborative programs for underserved populations will be developed. In addition, effective models for integration of these programs into governmental agencies and legislative mandates will be devised. Although research in these areas is in the initial phases, once completed, it will provide education with suggestions for mechanisms that can be used to implement base technical education for all underserved populations.

In summary, the research program of the participants in the Center for Base Technical Education and Transition has as its goals to: (a) consolidate the teaching technologies previously researched and developed by special education, regular education, and other educational entities with the advanced technologies required by industries, (b) develop and produce innovative and unique curriculum and assessment products specifically applicable to base technical skills, (c) integrate these products into the educational programs of school-age and adult underserved individuals, and (d) maintain and enhance research, development, and transference linkages with industry. The end product of these goals is the development of model programs and instructional materials for base technical education that can be readily available for state and national dissemination and replication. It will be these latter activities that will provide the Center with the ability to meet its goal of reducing the percentage of underserved young adults from the present figure of 60% to 12% by the year 2000.

SKILLED BASE TECHNICAL ASSESSMENT

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Existing Models

Special educators, vocational educators, and career guidance/job placement counselors routinely use assessment as a prelude to helping school age students make the transition from school to employment. Personnel officers, interviewers, and job placement services assess prospective employees before they are hired and current employees before they are promoted. The majority of these assessments analyze a combination of the following skills: (a) accumulated knowledge (intelligence), (b) educational experiences (achievement), and (c) current job-related performance level. While these analyses constitute assessment of the products of individuals' experiences, they fail to account for how the individuals process information they have gained (Hargrove & Poteet, 1984).

Assessments that identify the acquired products of learning are, by nature, static measures of behavior (Feuerstein, 1979). Although they provide ample information about an individual's current repertoire of knowledge, they provide only clues about what the individual can learn, how the individual will learn, and under what conditions the individual will learn most expediently and efficiently. Because they are static, these assessments allow neither the individual being assessed nor the examiner to predict logically the impact of their current skills on future performance.

Prediction of future performance may be the most critical factor in assessment. When students of secondary school-age begin the process of transition to work, prediction is critical for job training and placement. When young adults who have left the educational setting seek their first or subsequent jobs, prediction is critical to hiring, career counseling, and job selection. When underemployed or misemployed adults search for jobs that increase profit or personal satisfaction, prediction is critical to personal decision making. To make these predictions accurately, dynamic rather than static assessments are necessary.

The key to dynamic assessment is identifying the processes that individuals intrinsically use to obtain, organize, and utilize information and the processes they extrinsically use to manipulate themselves and their environment in response to specified needs. Few validated instruments exist that measure these processes. Therefore, the majority of dynamic process assessment is provided via diagnostic and personal inquiry. The remainder of this article will discuss the strengths and weaknesses of these instruments and techniques and how the Center for Base Technical Education is using them to develop new instruments for technical education.

Diagnostic Inquiry

Diagnostic inquiry is an organized, logical, and sequential manner of thinking that uses static, skill-based information to infer meaningful, realistic, appropriate, and ethical conclusions about the learning process. Diagnostic inquiry demands the use of logical, organized, inferential thinking strategies by the examiner that lead to appropriate transition and employment of the individual being assessed.

Development of the necessary strategies for diagnostic inquiry includes several essential elements. Examiners must be skilled at formulating diagnostic hypotheses. They must be able to investigate these hypotheses with a variety of diagnostic instruments. They must be willing to reject hypotheses that cannot be confirmed by diagnostic data and accept those that are viable. They must be able to scrutinize diagnostic information, recognize its numerous configurations and permutations, and integrate it into a reasonable individualized diagnostic outcome.

To accomplish these activities, examiners must possess several diagnostic skills. They must be aware of which diagnostic instruments provide data necessary to test hypotheses. They must be cognizant of functional and statistical criteria against which instruments are judged and the merits of instrument selection for specific populations. They must be able to compare scores obtained from one instrument with scores obtained from others in a quick and efficient manner. They must be able to use these scores to classify individuals according to federal, state, school district, and adult program guidelines, and justify the relevance of these classifications to employers and job trainers.

Examiners must also be able to identify multiple patterns of strengths and deficits within an individual's performance and relate these patterns to one another. These patterns must be plausible, must be related to severity and classification, and must be described by a set of characteristics accepted in the professional community, employer community, and community at large. In addition, the patterns must be sufficiently specific to lead to remedial or compensatory learning techniques.

From the static information obtained, examiners must be able to infer the dynamic learning processes that an individual uses. They must relate this information to the adaptive strategies an individual uses and the mechanisms the individual employs to manipulate the environment. They must use the information generated to make thoughtful, unbiased, nonjudgmental, ethical, and realistic predictions of an individual's potential to perform job-related tasks adequately. These predictions must be acceptable to the individual being assessed and must offer directions that can be followed to achieve the desired goals in life. Predictions must offer individuals personal understanding of their strengths and limitations as well as options that will

help them solve difficulties and accentuate strengths.

When conducted by skilled examiners, diagnostic inquiry can lead to dynamic assessment of learning processes. Creative, insightful examiners who have practiced their craft over a number of years and have had diagnostic experiences with a variety of problems can make astute clinical judgements from static statistical data to predict processes. Unfortunately, most teachers, counselors, personnel directors, and psychologists have either experienced insufficient diversity among the individuals they have assessed or lack sufficient inferential skills to engage in insightful diagnostic inquiry. As a result, diagnostic inquiry becomes a tedious, laborious, and costly endeavor that does not achieve the desired results.

Personal Inquiry

Assessment of learning processes through personal inquiry places the responsibility for assessment on the individual being assessed. Individuals must ask and respond to questions about how they learn; how they acquire, organize, and use information; how they manipulate their environments; how they adapt to task demands; and how they cope with new and unique information. Personal inquiry demands that individuals use logical and organized inferential thinking strategies to understand themselves and employ appropriate and thoughtful expressive strategies to communicate this information to others.

Like diagnostic inquiry, personal inquiry requires the use of several strategies to analyze the learning process. Individuals must be skilled at formulating hypotheses about the manner in which they learn and what causes success or failure in their endeavors. They must investigate these hypotheses using personal options, experiences, attributes, and attitudes. They must be willing to reject hypotheses that cannot be confirmed by data and accept those that are viable. They must scrutinize information about themselves, recognize its numerous configurations and permutations, and integrate it into a reasonable individualized diagnostic statement.

To accomplish the self-analysis needed for personal inquiry, individuals must exhibit superior problem-solving skills (Feuerstein, 1980). Because these skills are usually insufficient, the result is often inappropriate and inefficient diagnosis.

Process Instruments

Instruments that predict how an individual processes information are vital, yet underdeveloped, entities in assessment. To be useful, these instruments must be theoretically grounded in the constructs of metacognition (Brown & Palincsar, 1982; Torgesen, 1977, 1982; Meichenbaum, 1980; Wong, 1987), motivation (Adelman & Taylor, 1983; Kolligian & Sternberg, 1987), cognition (Feuerstein, 1980), memory (Torgesen, 1980; Wong, 1982), attention (Blackman & Goldstein, 1982; Hallahan, Lloyd, Kneedler, & Marshall, 1982; Hallahan, Marshall, & Lloyd, 1981; Hallahan & Sapona, 1983; Rooney, Hallahan, & Lloyd, 1984; Ryan, Weed, & Short, 1986), problem- solving (McKinney & Haskins, 1980; Shure & Spivak, 1978), and adaptive behavior (Greenspan, 1981a, 1981b; Weller & Strawser, 1987). Of particular interest is the work of Reuven Feuerstein (1979), who stated that the most critical factor for prediction is the assessment of cognitive processes and their application to learning. Feuerstein identified these processes in three phases: input, elaboration, and output. He hypothesized that problems within these phases, singly or in combination, were responsible for learning and processing deficiencies.

According to Feuerstein, input phase problems involve impairments with the quality and quantity of information individuals gather when solving problems. These impairments include: perceptions that are too blurred or too sweeping; impulsive and unsystematic learning behaviors; impairments in temporal concepts; difficulties with conservation of constancies (e.g., size, shape, quantity, distance); inadequate verbal discrimination tools; deficits of spatial orientation; unstable systems of spatial reference; inaccurate methods of gathering information; and inabilities to deal with more than one source of information in an organized manner. When these input difficulties occur, responses tend to be incomplete, inadequate, and lacking depth and content.

Problems with input are exacerbated by deficiencies in elaboration of perceived information. These difficulties include: (a) faulty use of available information to move toward appropriate responses, (b) inadequate perception of problems that exist, (c) insufficient clarification of problems, and (d) inadequate differentiation of relevant and nonrelevant cues to define and recognize the problem. These difficulties result in the lack of strategies for hypothetical thinking, organization necessary for planning behavior, and spontaneous comparison of one stimuli to another. They could also result in narrow mental fields, episodic grasps of reality, and lack of verbal concepts.

According to Feuerstein, output problems are expected when input and elaboration phases are inadequate. However, output problems also can occur in the absence of input and elaboration difficulties. Output deficits include: (a) trial and error responding, (b) impulsive or acting-out behaviors, (c) blocking, and (d) egocentric modes of communication. Output difficulties are identified by inaccurate projection of relationships, lack of precision and accuracy in selecting responses, and insufficient verbal tools to communicate responses that have been formulated and elaborated.

Recognition of these process deficits led Feuerstein to develop the *Learning Potential Assessment Device (LPAD)*. The *LPAD* identifies the processes an individual uses to grasp relevant cognitive principles. It trains individuals to mastery in elementary cognitive

principles which underlie problems, then presents series of different tasks which require a progressively complex generalization and application of the principles. Since individuals are taught the underlying principles before being asked to perform tasks which draw on those processes, the assessment of learning and cognitive potential is considered dynamic rather than static.

The *LPAD* is unique in its ability to measure dynamic learning processes and holds far-reaching implications for process measurement. However, its use is hindered by several factors: (a) examiners must undergo extensive training in administration and interpretation before they are qualified to use it, (b) its procedures are unstandardized, (c) it does not specifically identify individual adaptive capabilities, and (d) application and generalization are assumed rather than measured directly. The Center for Base Technical Education and Transition recognizes these weaknesses and is actively researching, developing, testing, and validating methods of process measurement that can be used as dynamic predictors of success in technical learning.

Research Model

The Assessment Research Division of the Center is currently using a battery of diagnostic tools that combine the qualities of dynamic and static assessment. Scores from this battery are being analyzed to develop a diagnostic instrument that will provide information about the strategies individuals use to generalize learning under different problem-solving conditions. These conditions, derived from research pursued by Center personnel over the last five years, encompass verbal, nonverbal, structured, unstructured, and adaptive processes. The strategies, manifested when an individual's learning strengths and weaknesses are challenged under these conditions, are being combined to yield a comprehensive measure of generalization.

Data for the development of the generalization instrument are being obtained from several assessment devices. An instrument is being used that identifies differential characteristics of learners from subgroups of the underserved population. Results from this instrument are incorporated with scores from tests of adaptive behavior (which in Center terminology is called cultural functionalism) and scores from static measures of intelligence and achievement. Scores from a career assessment instrument that identifies worker attributes as well as strengths and weakness patterns associated with different jobs are integrated with this information. In addition, an instrument is being used that assesses the quality and quantity of problem solutions generated by individuals when confronted with verbal tasks under structured conditions, verbal tasks under unstructured conditions, nonverbal tasks under structured conditions, and nonverbal tasks under unstructured conditions.

The goal of the generalization instrument is to provide an accurate measure of problem-solving strategies which can predict transition and employment success. The instrument is being refined to indicate specific employment and training options based not only on ability level, but also on processing capabilities. At present, data from the assessment devices being used to develop the instrument are interpreted by empirical analysis and diagnostic inquiry. When completed, the generalization instrument will yield a score that examiners can use and will generate a profile that lends itself to definitive comments and recommendations for training and employment.

To develop the generalization instrument as well as to provide assessment services to the community, the Assessment Research Division operates a testing center. This center evaluates adult clients referred by institutions of higher education, service agencies, community advocacy groups, and former clients. One hundred forty-five such clients have been evaluated to date. An additional 100 clients are anticipated to be evaluated during the coming year. The majority of the clients have never received any diagnostic evaluation. Most are uncertain about their current or future employment success. The clients range in age from 18 to 55 and represent an equivalent distribution by sex and socio-economic status. They hold or have held jobs including dishwasher, construction worker, teacher, accountant, personnel manager, and chief executive officers of industry. All have learning problems that affect their current or potential employment. It will be from the information collected from the assessment of these clients that the generalization instrument will be finalized. It will be their problems, characteristic of underserved populations, that will provide the Center for Base Technical Education and Transition the information it needs to produce a dynamic, process-oriented assessment instrument that can be used by examiners in the field to measure the problem-solving abilities and disabilities of adolescents and adults in transition to jobs in our technological society.

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A BASE TECHNICAL AND TRANSITION MODEL: IMPLICATIONS FOR CURRICULUM

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At present, base technical education curricula are not found in most educational settings, and models that integrate them with assessment, teacher training, job follow-up, and evaluation are unavailable. The purpose of this article is to present a model for base technical education and transition and to describe the foci of curricula that have been derived from it.

The content of the model was derived from the pursuit of a research agenda conducted over the past several years by members of the Center for Base Technical Education and Transition in the Department of Special Education at the University of Utah. The Center, a Utah Centers of Excellence Program, developed the model to describe the manner in which students with mild handicaps and underserved students in secondary schools should progress from generic preparation in the areas of mathematics, science, communication, and adaptive skills to educational curriculum options that prepare them for jobs in technological industries. These options include: (a) post-secondary vocational curriculum for preparation for specific jobs, (b) pre-college core curriculum for preparation for higher education, and (c) base technical curriculum for preparation for immediate entry into basic positions in the technological work force.

The research agenda that led to the development of the model began with investigation of characteristics of problems evidenced by children, youth, and adults with learning disabilities. From this focus the model was expanded to include the identification and instruction of individuals who were mildly learning disabled, systemically handicapped, at-risk, and underserved. At the present time, members of the Center are developing assessment instruments, curricula, evaluation procedures, and teacher training programs that will implement the model (See article by Weller included in this monograph). However, since the preparatory and base technical curricula components of the model have received the most attention, these components will be the principal focus of this article.

Curriculum Components

The curriculum component of the model was developed when members of the Center staff were asked by the Utah Advanced Technology Council to respond to industry's request for a curriculum that would teach secondary-age students the skills needed to enter the basic technical work force after leaving school. The resultant product consists of two interrelated curricula: Preparatory and Base Technical. The Preparatory Curriculum embodies specific skills in mathematics, science, reading, verbal communication, written communication, cultural functionalism, and adaptability that have been suggested to undergird transition, vocational education, and base technical education skills (Weller & Buchanan, 1983). The Base Technical Education Curriculum incorporates cultural functionalism, adaptability, social, and base technical skills that have been identified as the most significant contributors to transition success (Crelly, Weller, & Frederickson, 1987).

Preparatory Curriculum

Data from a field test of an assessment instrument called the *Career Assessment Inventories (CAI)* (Weller & Buchanan, 1983) were used as the foundation of the Preparatory Curriculum. The *CAI* is a career preference inventory that incorporates the assessment of communication, visual/spatial, and motor strength and weakness patterns with Holland's (1973) assessment of personality attributes and career interests. After the inventory had been administered to over 500 adults, the authors found that the inventories suggested preparatory interventions appropriate for individuals who are learning disabled, at-risk, and underserved desirous of obtaining entry-level positions in advanced technology industries.

The interventions suggested by the *CAI* were expanded with input from community-based programs, school districts, and industry. A Center staff member met with industry representatives (usually personnel directors), school administrators, and teachers to determine the appropriateness of the proposed content. Industry representatives voiced broad assumptions concerning required reading and math levels. Teachers and administrators concurred with these concerns. Personnel directors provided information about tasks required for entry level positions in advanced technology industries (e.g., reading schematic drawings, soldering). Teachers and administrators related these tasks to the existing school curriculum.

Industry representatives placed high priority on prerequisite social skills as well as employment readiness skills. Teachers and school administrators placed high priority on academic skills. Using this information, special educators at the University of Utah finalized a Preparatory Curriculum designed to be a short-term means (9 weeks) for remediating insufficient mastery of specific skills, or a long term (1 to 2 years) curriculum for the introduction and instruction of the academic and social skills involved.

In the Preparatory Curriculum, academically related prerequisites include communication (English, reading, written communication, oral communication), mathematics, and physical sciences. English consists of functional reading comprehension and written communication. Employee manuals, application and insurance forms, and non-prose reading materials (such as schedules, graphs, computer spread

sheets, and schematic drawings) are among the materials used. Written communication skills include completing application and other necessary forms, writing memos, business letters, and telephone messages. Oral communication includes listening skills, telephone, conversational, and explanatory oral language expression. Public relations with customers, visitors, other employees, and supervisors are also included.

The curriculum provides for diverse mathematics and scientific skills. Keyboarding and data entry are included. Math computation skills encompassed the use of calculators and ten-key adding machines. Direct application of mathematics skills for employment situations is emphasized. Instruction in sequential counting, listing, standard English measurement, and the meaning of number codes is provided. The physical sciences activities include elementary chemistry, electricity, magnetism, simple machines, reading meters and gauges, and job safety information. All activities associated with the preparatory curriculum were selected for their functional and practical foci.

The skills in the Preparatory Curriculum were selected to provide students with the basic competencies that facilitate movement to any one of the following options: (a) a curriculum designed to lead to specific post-secondary vocational training, (b) a pre-college core academic curriculum, or (c) the Base Technical Education Curriculum. To establish the value of the Preparatory Curriculum as an introduction to the Base Technical Curriculum, the Center is currently examining its relationship to post-secondary vocational curricula, core academic curricula, and to those students who, by choice, do not become employed upon leaving school.

Base Technical Curriculum

To develop the Base Technical curriculum, the input gained from industry representatives has been integrated with the results of an ethnographic study. In 1987, Crelly, Weller, and Frederickson conducted analysis of entry level positions in four industries. Observations of employees in shipping and receiving, stores, general assembly, electronic assembly, quality control, and product testing indicated that the curriculum should address a range of skills required for entry level technological employment. These skills include keyboarding, spread sheet interpretation, letter and number sequencing, inspection, schematic and diagram reading, parts identification, harnessing, soldering, and component identification. In addition, skills of cultural functionalism including safety (both personal and equipment), ethics, and personal management (absenteeism, appearance, hygiene) are required.

In contrast to the Preparatory Curriculum, the Base Technical Curriculum was designed as a transition curriculum to facilitate entry into the work force. The curriculum is generic, rather than job specific and provides an introductory exposure to the six basic entry level employment categories observed in the ethnographic study (e.g., shipping and receiving, stores). During a specialized program, extending from 6 weeks to 6 months, students can acquire a core of knowledge and skills specifically designed for entry level applicants in these positions.

The Base Technical Curriculum employs hands-on experience in a model technological factory in addition to class work. Materials, equipment, and instructors for the technical training are supplied by participating industries. Within the "factory" students rotate from station to station, thus receiving an introduction to each entry level position - shipping and receiving, stores, assembly, quality control, and product testing. Students receive practice in keyboarding, reading spread sheets, identifying and sequencing Part Identification Numbers (PIN), and matching PIN numbers of actual components to the components themselves. They learn the names of the components with which they have worked and the relationship of each part to one another. They also practice soldering, harnessing, and assembly tasks with actual components in response to diagrams and schematics they have learned to read. Their studies lead to the production of a "working widget" that serves as their final in-class project.

The primary purpose of the curriculum during its in-school phase is to provide exposure, not mastery, to the various jobs. However, during the latter phase of the instruction, students spend one-half of their day at actual factories. There they complete application forms and interviews and receive both verbal and written evaluations from personnel directors regarding their product and performance. They shadow industry employees and complete tasks on the industry "floor." In addition, they receive verbal and written evaluations from foremen.

During this phase of the curriculum, special emphasis is placed on listening skills, following directions, and appropriate verbal communication. When minimum competencies are not met, students receive additional classroom instruction in the curriculum or in the Preparatory Curriculum. At the conclusion of the training, students complete a formal job application process, and if hired, complete a three month internship. Following the successful completion of the internship, the students become regular employees within industry. They are tracked for three months in these positions to ascertain the degree of generalization of the Base Technical Education curriculum to an actual entry-level job in a technological industry.

Additional Components

Attached to both the Preparatory and Base Technical Curricula is a cultural functionalism component designed to be taught both in the classroom and on-site in industry. Personal self-care, hygiene, groom-

ing, and appropriate clothing and makeup are discussed and demonstrated. Objectives are included for developing a good self-concept; working and living for success; appreciation of self; ethnic appreciation and acceptance of others; and commitment to self, family, friends, and job. Students learn the elements of various verbal skills (i.e., assertive and negotiation techniques, asking questions, body language) and solve potential work-related problems. Throughout the program, students receive feedback from teachers, personnel directors, and actual employees as to the appropriateness of their responses.

In addition to the components of the curricula, manuals of instructional procedures that implement the two curricula in educational and transition programs are being developed. These manuals include management plans for individualization of instructional procedures that can be used by educators and industries in their technical, base technical, and transition preparation programs and strategies for job follow-up and evaluation. When validity for the content of both curricula and the manuals have been established fully, the basic competencies addressed in the curricula will be modified as needed. Competencies will be grouped under standard curriculum areas such as English, social studies, math, and vocational studies. Whenever possible, behavioral objectives from the core educational curriculum used in all secondary schools will be modified to fit the curricula and the content of the curricula will be grouped under traditional subject headings to ensure that graduation credits can be earned.

Field-Test and Evaluation

Following the development of the curricula, the Center participated in an implementation and field-test of the curricula. Both curricula were field- tested at an alternative school in the Salt Lake City, Utah, area. Current enrollment at the school is 65% male and 31% minority members. Most of the students are from low-income families and could be considered disadvantaged and underserved. Furthermore, both pre-job training and on-the-job training were available under the auspices of this site. In addition to the alternative school, a second site implemented only the Preparatory Curriculum. This site encompassed 15 programs including work-study programs in food services, hotel maintenance, and light construction. Pre-job training and on-the-job training were also available at this site.

In order to confirm, reject, or modify the efficacy of the curricula, evaluation procedures were instituted by the staff of the Center. Rating sheets were used that employed the Discrepancy Evaluation Model to evaluate programmatic differences between expectations held by teachers, industry personnel, and developers of the program. Separate evaluation instruments were designed and used to assess: (a) the adequacy of the assessment components to predict an individual student's performance in the Base Technical Education and Preparatory curricula activities, (b) student mastery of the specific skills included in both curricula, and (c) generalization of the curricula components to an actual job environment. Analysis of the data collected from these analyses yielded the following information:

1. When used together, the curricula are too long and encompass too many weeks of student and teacher time. Because the majority of the curriculum is preparatory rather than base technical, the foci of the curriculum should be divided into two components (preparatory and base technical) with the preparatory being taught in regular class offerings for math, science, and health and the base technical being taught exclusive of the preparatory.
2. The base technical components depend too heavily on the use of industry "teacher/advisors." If the Base Technical Education Curriculum is to be maximally effective, inservice or preservice training for secondary-school teachers in the area of technical skills is required.
3. The cultural functionalism components are equally critical to the components of both curricula. Students who master the base technical components without sufficiently mastering the cultural functionalism components of the curriculum will not be viewed as highly by industry evaluators as those student who sufficiently master both.
4. The sequence of the program content requires revisions. Students could profit more from beginning the program with "hands-on" experiences than they do with the present "lecture-before-hands-on" format. Therefore, the evaluation has suggested a modification of teaching order within the base technical component as well as separation of base technical components from preparatory components.
5. The in-class "factory" was confirmed as positive, but should be modified to provide students more time in its setting. Students should learn the entire base technical education curriculum in this setting rather than just using it for practice after lecture. If the program were modified to separate the preparatory from base technical components of the curriculum, this modification would be feasible.
6. Industry representatives have indicated that students who successfully complete the curricula would be viewed by personnel officers as possessing the base technical skills required to obtain entry level jobs in advanced technology industries. Although the manner in which the curricula are presented requires modification, the content of the curricula has received initial confirmation.

Modifications and Revisions

At present, the curricula have been modified according to the evaluation results. First, modules for the training of teachers who instruct students in the curricular components are being added as an integral portion of the curricula. The modules for both the Preparatory Curriculum and the Base Technical Curriculum are being developed, administered, and evaluated by the Center and industry trainers through the auspices of the Utah Advanced Technology Council. These modules represent an innovative mechanism in that representatives from industry are taking an active role in the development of materials used by educators, not exclusively industry trainers, to prepare youth in base technical skills.

Second, the revised version of the curricula place primary emphasis on base technical and cultural functionalism components. The academically-related components of the Preparatory Curriculum will be integrated totally into the core curriculum rather than a separate curriculum structure. As a result, the timeline for teaching the curricula has been intensified. In the field-test, preparatory, academically-related skills were taught before base technical skills and cultural functionalism. As a result, the entire program required a full calendar year. For the revised program, the time span has been reduced to a maximum of six months.

A third modification deals with the order of presentation. In the original Base Technical Curriculum, relevant background information such as base technical vocabulary and names of components was taught; then hands-on training was provided. Since the evaluation information indicated that hands-on training should precede presentation of background information, the revised curriculum teaches experientially. Identification of parts and vocabulary terms for base technical terminology are not introduced until the parts have actually been used. By allowing students to focus on simple physical tasks immediately, it is anticipated that their interest, knowledge, and task orientation will be maximized.

A fourth modification of the curriculum relates to the use of the in class "factory." Whereas the factory atmosphere was suggested for only a portion of the original curriculum, the revised version suggests the use of a simulated industry assembly area for the classroom. It is anticipated that this atmosphere will allow for maximum understanding and relationship between what is being taught and how it will relate to actual working conditions. Since students will be taught in the "factory" and graded on entry level skills used there (keyboarding, electrical assembly, harness assembly, soldering, and cultural functionalism), the transition to an industry setting should be facilitated.

Benefits

Use of the curricula described in this article could result in a number of direct and indirect benefits to employers, educators, consumers, job counselors, adult service system agency personnel, family members, underserved adults, and the professional community. Career selection can become more individualized, more career options can become available, and career success more probable. Unemployment and underemployment can be reduced and more underserved individuals can exercise an option for participation in post-secondary programs, pre-college curricula, or base technical training for immediate job entry. Selection of these options can lead to skilled or professional employment as well as an increase in the advanced technology work force.

The parents and families of underserved individuals can also benefit. Through the cultural functionalism components of the curricula, underserved students will acquire knowledge and skills that positively impact family relationships. Through the technical education components of the base technical education curriculum, these students will develop knowledge and skills that will lead to employment, greater employment security, and horizontal and vertical mobility in advanced technology industries. These skills will benefit the family by improving work and independent living status over time.

In addition to individuals and their families, the curricula can also provide benefits to advanced technology industries and the educational community. Industries will be able to employ underserved individuals who have completed the base technical education training program and are prepared with skills needed for job mobility and success. They will be able to acquire a sufficient number of qualified, adaptable, and skilled employees to meet their labor demands and significantly reduce the training they have historically provided. The educational community will profit from the acquisition of technically based curricula that is replicable. Because the curricula have been designed in such a manner that they can be replicated in whole or in part, they can be modified for use in a variety of secondary school settings.

However, before the curricula are adopted by other educational entities, issues related to replication cautions must be addressed. First, the curricula described in this article were developed and implemented for a limited group of at-risk and underserved youth in alternative-school settings and were not tested in standard school programs. Although the students represented minority groups, the majority were Hispanic. The curricula were field-tested in an urban school district, the only truly urban area in the state. However, this district only has a total student population of 20,000 students. To demonstrate the effec-

tiveness of the curricula, replication in larger metropolitan areas with more diverse ethnicity, suburban areas, and rural sites is needed.

Success of the Preparatory Curriculum and Base Technical Curriculum depends heavily on active industry/educational collaboration. The curricula developed by the Center evolved from direct input from local Utah industries. Industry needs could vary in different locales and variations could exist between industries. Since the technological needs and demands of industry change rapidly, evaluation and modification of the curricula must be continuous. Replication efforts should always include input from industries located in the geographical catchment area in which the curricula are being used.

Replication of the curricula must also consider teacher differences. Replication should ascertain whether the strength of the curriculum in providing the preparatory and base technical skills necessary for transition success can be attributed to the design and methodology of the model or to some external undetermined factors, such as an exceptional teacher, the Hawthorne Effect, or chance. Educational settings that choose to engage in replication of the curricula must be aware of the possibility of occurrence of these factors.

Future Avenues

The Center for Base Technical Education and Transition plans to extend the use of both the Preparatory Curriculum and the Base Technical Education Curriculum during the coming years. This extension will employ several avenues: (a) finalization and dissemination of assessment instruments related to the curricula, (b) extension of the Base Technical Curriculum upward towards post-secondary settings, (c) extension of the Preparatory Curriculum downward toward middle-school and elementary settings, (d) direct training of students in pilot projects of the Center, and (e) training of teachers in inservice and preservice preparation programs who will, in turn, teach base technical skills to underserved students. It is the goal of the Center that, over the next five years, approximately two of every five members of the underserved population will have been trained in the curricula. If this goal can be met, it would represent a 390% increase in the persons being prepared for entry level positions in advanced technology industries by the year 2000.

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TRANSITION FROM SCHOOL TO ADULTHOOD: BARRIERS AND SOLUTIONS

Lisa Sosa, B.S.

National attention and research concerning handicapped individuals has been devoted to the educational priority of the 80s - transition from school to adulthood. However, at best, progress is slow. Each year, approximately 300,000 handicapped young adults leave high school only to experience unemployment and underemployment (Rusch & Phelps, 1987). Further, 67% of all handicapped persons between the ages of 16 and 64 are not working; of those persons, two-thirds say that they want to work (Rusch & Phelps, 1987). A national longitudinal study conducted by Owing and Stocking (1985) reported that in 1980, 22% of all handicapped students, compared to 12% of all nonhandicapped students, had dropped out of school between their sophomore and senior year. Only 29% of the handicapped students were enrolled in vocational education programs. These studies indicated that current transition services are less than totally successful.

Somewhere in the school system and post-secondary adult agencies, a breakdown has occurred, stopping individuals with handicaps and underserved individuals from obtaining employment. Many professionals agree that this breakdown is a result of agencies and schools failing to provide support and deliver services in a collaborative and organized way so that students will be assured the opportunity to become employable.

Transition services are dependent on transition teams. Each member of the team (administration, special education, regular education, counselors, social workers, agency representatives, vocational education, employers, parents, students) has major roles to play in the transition process of obtaining long-term employment for a student. When all members understand their responsibilities and cooperatively work toward the same goal, success should be automatic. However, in reality, this is easier said than done.

An Oregon state-wide survey (Benz & Halpern, 1987) reported that one-third of the special education administrators in Oregon did not regard coordination as an important issue. Consequently, when an interest in coordination was present, teachers and administrators had different perceptions about who was responsible for such coordination. Fifteen percent of the school districts admitted that no coordination with any adult service agencies had been made. Of the districts surveyed, less than 10% had formal interagency agreements in place. From these data, it could be suggested that cooperation between schools and agencies is not being implemented effectively.

As transition services continue to be a national priority, it is mandatory that cooperative and effective relationships between parents and professionals be developed. Before this can happen, important issues need to be addressed. What are the barriers stopping effective transition from school to work? What initial changes need to be made so that the underserved and handicapped can become productive and employed members of society? The purpose of this paper is to discuss these issues as they relate to the reasons collaboration and cooperative agreements among professionals and parents are not working and to suggest some possible solutions.

Barriers to Transitional Planning

When individuals from different agencies and backgrounds attempt to collaborate and implement a feasible transition plan for a student, difficulties are encountered. Although each individual may represent an agency that has a similar goal for the students' employment, individuals within agencies often lack basic knowledge about one another. This lack of knowledge may result in duplication of or gaps in services. Barriers to cooperation must be identified and efforts must be coordinated before professionals work together (Asselin, 1987). These barriers include: dimensional barriers, attitude barriers, lack of parent involvement, and lack of transition teams.

Dimensional Barriers

Wiant, Warmbrod, and Pratzner (1984) identified four dimensional barriers to interagency cooperation: (a) situational dimension barriers, (b) structural dimension barriers, (c) process dimension barriers, and (d) outcome dimension barriers. Situational dimension barriers relate to the foundation and conditions that must be present for interagency relationships to be successful. Lack of cooperative commitment, knowledge, and coordination among agencies and organizations are examples of situational barriers.

Structural dimension barriers involve specific laws and regulations that govern each organization, the power of each organization, and the way organizations are interrelated. An example of a typical structural dimension barrier is funding. Although states receive federal money for handicapped services, "legislation and administrative policies prevent states from effectively using these revenues to increase community service programs" (Hardman & McDonnell, 1987, p. 497).

Process dimension barriers are an extension of the structural barriers and include the working relationship between organizations. On example of this barrier is transition programs that do not continue from school to adult agencies. Although a student may experience tremendous success in a high school program, he or she may later be graduated with no adult agency responsible for continuing services. The result is a process dimension barrier.

Finally, outcome dimension barriers define a common goal between organizations and evaluate the effectiveness of the goal. To overcome this barrier agencies must work together in the evaluation of programs as well as program development and maintenance. Assessment of a transition program, in each agency involved, should be a major evaluation effort. Identifying mistakes being made by programs and implementing positive corrections should be an ongoing effort among agencies to overcome this barrier.

Attitudinal Barriers

Sarkees & Scott (1985) identified additional barriers such as different personality styles, negative group dynamics, and over-confidence of one team member. These barriers are caused by the human element present in all transition teams (Brown, et al,1987). Brown stated that society "functions under the tragic illusion that we professionals like each other, work together...and plan jointly. We do not" (p. 548). Professionals must examine their motives and recommit their efforts to being advocates for the handicapped and underserved.

Lack of Parent Involvement

In a survey by Benz and Halpern (1987), teachers were asked to indicate how satisfied they were with the involvement of parents in the transition process. Thirteen percent of the teachers reported that they were very satisfied with parent support. Thirty-six percent of the teachers reported that they were either dissatisfied or very dissatisfied with parent support. Fifty-seven percent of the parents reported that contact with their child's teacher happened once a term or less. Other studies report parental dissatisfaction and limited involvement during the process of developing individual educational plans in schools (Lynch & Stein, 1982).

Although most professionals would agree that parent involvement is a critical part of the transition process, the majority of parents continue to play an inactive role. Parents may not be aware of employment options available for their children or may feel intimidated by school personnel and agency representatives. These barriers prevent parents from becoming involved members of the transition team and must be overcome if students are to reach their full employment potential.

Lack of Transition Teams

The list of barriers described thus far assumes that a transition team exists. However, with the countless duties and time-limits placed on educators today, gathering all members of the transition team together in one setting takes extensive planning and organization. Unfortunately, the ideal local transition team is the exception rather than the rule (Brown, et al, 1987). Wehman stated that "no matter how excellent state interagency agreements may be, the real action for change occurs locally" (p. 547). Although the proper legislation, funding, and agreements may be in place, transition plans will continue to fail unless parents and professionals cooperate fully to implement, evaluate, and modify the plans.

Overcoming Barriers to Transitional Planning

Eliminating barriers to transitional planning is a difficult process that must include numerous persons. The following section discusses possible solutions for barriers to transition planning and includes ways to foster positive attitudes and increase parent awareness and support.

Fostering Positive Attitudes

Effective use of interagency agreements fosters positive attitudes of members of transition teams. Properly written interagency agreements should be specific and outline (a) what one agency does for another, (b) in what setting services are delivered, (c) the conditions for providing the service, (d) the types of clients to be served, (e) the financial arrangements between agencies, and (f) what, if any, limitations of the agreement exist (Sarkees & Scott, 1985). Verbal agreements should be avoided as these lead to confusion of roles and responsibilities. Agreements that specify general intent to cooperate or share non-specified goals also should be avoided since they lose focus over time and become meaningless.

Writing an interagency agreement is a good start toward successful transition planning, but becomes meaningless if it is not followed after the agreement is in force. The transition linkage team, not the document, does the work. Greenan (1980) identified goals toward which interagency linkage teams should strive. Only by working together to reach these goals, can barriers to transition planning be overcome effectively.

1. Working together to identify problems.
2. Exploring possible solutions to transition dilemmas and selecting those that are most feasible.
3. Keeping the commitment to cooperate alive.
4. Sharing ideas between local and state levels.
5. Educating the community to accept and encourage employment of handicapped persons.
6. Decreasing overlapping services despite job lay-offs and seniority.
7. Fostering feelings among the agencies involved that cooperation will be of mutual benefit.
8. Initiating referral systems through which agencies can send clients to the cooperating agency with the most appropriate resources.

Increasing Parent Awareness and Support

Parental support and involvement is vital to the transitional success of the student. Parents who are informed fully about the transition process will be better equipped to participate. Schools can increase parent involvement by providing appropriate information about support services, transition plans, pertinent legislation, regulations, and employment options that

prepare youth for successful employment. A parent's ability to select appropriate services is directly related to the amount and quality of information they receive.

Conclusion

The goal of transitional planning for underserved and handicapped individuals is immediate employment or enrollment in programs that will provide further training needed for employment. Obtaining this goal involves cooperative planning to overcome barriers. Singletary (as cited by Sarkees & Scott, 1985) is an appropriate commentary on both the problem and the promise of transition planning for handicapped youth.

> Cooperation is a lot easier to talk about than to achieve. We need to feeling of security and mutual respect so that, as someone has said, there will not be the feeling that we are "doing" while the other group is "operating." To attain this elusive goal, we must fight off the most negative of human emotions...That is, suspicion of other professional groups, concerns for our own insecurities and worries about potential loss of status and prestige. (p. 196.)

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ASSESSING THE INTERESTS AND CONCERNS FOR COLLABORATIVE RELATIONSHIPS TO MEET THE NEEDS OF THE UNDERSERVED POPULATION

Marshall Welch, Ph.D. and Suzanne Wade, Ed.D.

The mission of the Center for Base Technical Education and Transition Excellence is to research, develop, implement, and validate base technical and transition curriculum and assessment instruments to prepare underserved student populations. Underserved populations may be thought of as students, who by virtue of the inappropriateness of academically based curriculum and assessment, are labeled by the educational system as mildly handicapped (learning disabled, behavior disordered), slow learners, culturally deprived or ethnically different, school failures, and potential drop-outs (Center for Base Technical Education and Transition, 1987).

To provide the instructional support necessary to meet the needs of this underserved population, there has been a call for practicing shared responsibility on the part of special and regular educators (Stainback & Stainback, 1984; Will, 1986). This practice will require collaboration of regular and special education/reading teachers to develop and assess curriculum materials and instructional strategies in the regular classroom. Such an innovation will mean that both regular content area teachers and specialists must assume new roles and responsibilities for which they may have had little training. If, however, the innovation of shared responsibility in meeting the needs of the underserved student population is to be successful, concerns of those involved with the proposed change and innovation must be taken into account.

Gross, Giacquinta, and Bernstein (1971) suggested that significant resistance to change will occur when skills and knowledge necessary to perform a new role are not considered. Implementing educational change that impacts roles and responsibilities may directly conflict with teachers' attitudes, values, and beliefs which will likely result in hesitancy and resistance on the part of those directly involved (Waugh & Punch, 1987). Attitudes may be thought of as the result of information combined with an evaluation of that information a person has about a specific object or concept that results in specific behavior toward the object or concept (Fishbein & Ajzen, 1975).

Friend (1988) has noted that special and regular educators voice specific concerns manifested as anxiety regarding collaboration and consultation related to confusion about roles and responsibilities, time cost, accountability, and autonomy, as well as necessary skills and knowledge base. Waugh and Punch (1987) reviewed the research literature on change and have identified six variables affecting teacher receptivity to change and innovation which are: (a) basic attitudes toward education, (b) to what degree fears and questions associated with change are resolved, (c) practicality of change in logistical operations, (e) perceived expectations and beliefs regarding the innovation(s), (e) perceived support within the school setting for the innovation, and personal cost appraisal associated with innovation. The arousal and resolution of concerns are highly personal and will have a direct impact on the degree to which innovation and change is successfully implemented (Hall, George, & Rutherford, 1977).

It therefore appears to be appropriate and necessary to assess teacher concerns regarding change prior to proposing and implementing innovations if those innovative changes are to be adopted and effective. The assessment process must be theoretically based and must implement an adequately field tested and reliable instrument to measure complex attitudinal variables such as concerns (Towner, 1984). Furthermore, the assessment process must provide useful and easily accessible information to administrators and/or other change agents at the building level to assist in planning and implementation. This is particularly germane to redefining roles and responsibilities in meeting the needs of underserved students if the philosophy and practice of shared responsibility is to be realized.

Development of the Diagnostic Instrument

An instrument was designed to measure two critical variables affecting successful implementation of any type of planned educational change. These variables include: (a) level of interest in order to assess whether and to what extent teachers are interested in participating and (b) types of concerns teachers may have about the change in order to identify clusters of problems and needs related to the innovation and its implementation. The instrument has the potential of serving as a useful diagnostic tool to assess teachers' initial reaction to the proposed change, which is the first step in identifying intervention strategies that would be responsive to teachers' concerns.

The theoretical foundation from which this assessment process and instrument was constructed is based upon a combination of approaches and theories. To understand behavioral intention, which is thought of here as intention to adopt and accept the innovation of shared responsibilities in teaching underserved students, it is necessary to assess an individual's attitudes toward the behavior (Fishbein & Ajzen, 1975). The degree of behavioral intention is determined by estimating educators' level of interest in collaborative efforts.

An affective component reflects an individual's concerns regarding engaging in specific behavior, which in this case would be collaborating in the teaching process with underserved populations. The instrument has been developed to determine the affective component of attitude and behavioral intent by

surveying educators with regard to concerns and/or anxieties they have pertaining to collaboration in educating integrated "at-risk" students. Using this as a definitive base, the complexity of understanding educators' behavioral intentions is enhanced by examining: (a) an expression of interest in collaboration and (b) affective factors, such as concerns.

The concept of developmental or hierarchical categories of concerns developed by Hall, George, and Rutherford (1977) has been applied in the construction of the instrument. The Concerns Based Adoption Model (CBAM) is an empirically based conceptual framework that outlines the hierarchical and developmental sequence of concerns that individuals experience as innovation and change is implemented. The CBAM is based on a theoretical premise that change agents must base the selection of their intervention activities on the diagnosis of the persons engaged in the implementation of any innovation through a process of assessing concerns (Hall, George, & Rutherford, 1977).

Concerns reflecting the variables identified by Waugh and Punch (1987) as being related to teacher receptivity to change were modified and grouped into five categories on the instrument developed by the authors. The modified variables have been categorized to include: (a) fears of inadequacy, (b) concerns about loss of control and/or autonomy, (c) personal cost, (d) compatibility with previous role/training/philosophy, and (e) impact on the student and school system as a whole. There are five items per category of concern on the instrument. Each item has a six point Likert scale response.

Each item is phrased in such a way to reflect a respondent's belief that a specific situation or scenario would occur if regular classroom teachers and specialists collaborate to teach learning and reading strategies in a regular classroom that has been integrated with at-risk students. The content of the items were modified questions extrapolated from various reliable and valid attitudinal instruments (Gans, 1985; Hall, George, & Rutherford, 1977; Larivee & Cook, 1979; Welch, 1988). Items were worded in a manner that reflects some component of a given category. For example, on the interest section, Item 10 represents an interest associated with administrative responsibilities.

ITEM 10 - I am interested in organizing workshops and/or
presentations at local conferences to train other educators.

The following figure presents an outline of the categories of concern addressed in the instrument.

CATEGORY OF CONCERNS #1
1. MY PRESENT LEVEL OF KNOWLEDGE AND SKILLS TO TEACH READING AND LEARNING STRATEGIES IN A REGULAR CLASSROOM THAT CONTAINS BOTH SPECIAL NEEDS AND REGULAR STUDENTS
2. MY PRESENT LEVEL OF KNOWLEDGE AND SKILL TO MANAGE A CLASSROOM CONTAINING BOTH REGULAR AND SPECIAL NEEDS STUDENTS
3. BEING HELD ACCOUNTABLE FOR STUDENT ACHIEVEMENT IN THE PROPOSED COLLABORATIVE PROJECT

CATEGORY OF CONCERNS #2
1. LOSS OF CONTROL OVER DECISIONS MADE IN THE CLASSROOM REGARDING CURRICULUM AND INSTRUCTION
2. WHAT TYPES OF STUDENTS WILL BE PLACED IN CLASSROOMS
3. MY ABILITY TO VOICE CONCERNS ABOUT THE INNOVATION AND BE HEARD
4. LOSS OF AUTONOMY OVER MY CLASSROOM

CATEGORY OF CONCERNS #3
1. THE AMOUNT OF TIME NECESSARY TO BE INVOLVED IN THE PROJECT
2. THE AMOUNT OF EFFORT AND WORK THAT IS INVOLVED IN THE PROJECT
3. REWARDS, INCENTIVES, AND ADMINISTRATIVE SUPPORT THAT WOULD BE PROVIDED TO THOSE INVOLVED
4. WHETHER THE PROPOSED PROJECT WOULD BE PERSONALLY SATISFYING.

CATEGORY OF CONCERNS #4
1. COMPATIBILITY OF THE PROPOSED PROJECT WITH CURRENT ROLE EXPECTATIONS,
2. COMPATIBILITY WITH EXISTING CURRICULUM, MATERIALS, TEACHING METHODS, AND ASSESSMENT PROCEDURES
3. COMPATIBILITY WITH BELIEFS ABOUT GOOD TEACHING

CATEGORY OF CONCERNS #5
CONCERNS ABOUT WHETHER THE PROPOSED PROJECT WILL HAVE A POSITIVE OR NEGATIVE IMPACT ON:
1. STUDENT ACHIEVEMENT
2. STUDENT MOTIVATION
3. INTEGRATION OF SPECIAL NEEDS STUDENTS AND REGULAR STUDENTS
4. COMMUNICATION AND COLLABORATION AMONG FACULTY

Twenty-five items compose hierarchical stages of interest. Five items per stage assess to what extent teachers are interested in collaboration. The stages of interest from lowest intensity to highest are: no interest, informational, consultation, collaboration, and

administrative/leadership. The items were either modified and adopted from the *Stages of Concerns*(Hall, George, & Rutherford, 1977) or developed by the authors. The following outline represents the stages of interest addressed in the instrument.

STAGE 0
I HAVE NO INTEREST IN PARTICIPATING IN THE PROPOSED PROJECT
STAGE 1
I AM INTERESTED IN OBTAINING INFORMATION ABOUT THE PROPOSED COLLABORATIVE PROJECT AND ABOUT TEACHING READING AND/OR LEARNING STRATEGIES IN THE CONTENT AREAS BY ATTENDING WORKSHOPS, READING ARTICLES OR TALKING TO SOMEONE.
STAGE 2
I AM INTERESTED IN CONSULTING WITH OTHER TEACHERS/SPECIALISTS. EXAMPLES MIGHT INCLUDE: ADVISING OR SEEKING ADVICE ABOUT TEACHING READING AND/OR LEARNING STRATEGIES, OBSERVING OTHER EDUCATORS DEMONSTRATE METHODS/TECH-
NIQUES IN A REGULAR CLASSROOM, MAKING RECOMMENDATIONS TO TEACHERS OR SPECIALISTS ABOUT CURRICULAR AND INSTRUCTIONAL IDEAS. THIS PROCESS WOULD GO BEYOND JUST ACQUIRING INFORMATION IN THAT IT REQUIRES MORE INVOLVEMENT AND IS ON-GOING WITHIN THE SCHOOL SETTING.
STAGE 3
I AM INTERESTED IN TEAM TEACHING AND COLLABORATING WITH OTHER TEACHERS/-SPECIALISTS WHERE I CAN TRY TECHNIQUES THAT HAVE BEEN DEMONSTRATED AND/OR GENERATE AND EVALUATE INSTRUCTIONAL STRATEGIES WITH OTHER TEACHERS/SPECIALISTS. THIS IMPLIES AN ON-GOING TWO-WAY INTERACTION, SHARED RESPONSIBILITY, AND PARTICIPATORY DECISION MAKING.
STAGE 4
I AM INTERESTED IN ASSUMING SOME ADMINISTRATIVE RESPONSIBILITIES FOR A COLLABORATIVE PROJECT OR PROGRAM. THIS MIGHT INCLUDE LEADING WORKSHOPS, TRAINING OTHER TEACHERS, AND DISSEMINATING INFORMATION (SUCH AS WRITING ARTICLES) ABOUT THE PROJECT.

The instrument has undergone extensive field testing and revisions. The instrument is presently being field tested to assess internal reliability using Cronbach's Alpha Coefficient (Cronbach, 1951) procedures which employ SPSS-X programs. The instrument will be administered to regular classroom teachers and specialists in three school districts in the greater Salt Lake City, Utah, metropolitan area. Two elementary, two middle, and two high schools not presently engaged in any type of innovation involving collaborative teaching will be randomly selected from three school districts as field testing sites for the version proposing collaborative innovations. The same procedure will be used to assess the interests and concerns of teachers in schools currently engaged in collaborative innovations to field test another version of the instrument. A comparison of schools engaged in collaborative innovations with those not presently engaged may reveal interesting differences in stages and degree of concerns and interest. Inter-rater reliability in validating each of the five questionnaire items for each category of concern and stage of interest has been conducted revealing a 93% agreement among twelve raters.

Conclusion

This instrument will be useful because it will provide a profile of interests and concerns of individuals or a faculty as a whole with regard to collaborating to provide instruction in learning and reading strategies to underserved and at-risk students integrated into regular classroom settings. The profile will provide administrators and change agents useful diagnostic information to assist in planning inservice and staff development programs to facilitate implementation of system change and innovation. By identifying specific areas of concern, administrators will be able to pinpoint specific areas for intervention. Also, the process will demonstrate a real need for sharing responsibilities in the educational process.

The shared responsibility could and should involve industry. Speakers from industry may provide information regarding how departments work together to address a common concern. Furthermore, representatives from industry and the business sector can be instrumental in helping specialists and classroom teachers work together to identify specific types of reading and learning strategies that are applicable and relevant outside academic settings. Such input would further validate the need to collaboratively teach skills that can be generalized not only to regular classroom settings, but to work settings as well. To maximize the diagnostic process, the instrument will be available on computer software discs. Faculty members can complete the questionnaire at their convenience using a computer keyboard, and the administrator can have access to the information profile at the touch of a key.

The instrument will be a valuable diagnostic tool to facilitate meeting the needs of underserved students through shared responsibility of educators. Its development also addresses the mission of the Center

for Base Technical Education and Transition Excellence to create a linkage between industry and education. This linkage provides a vehicle for cooperation and collaboration in research and implementation endeavors. The software version of the diagnostic tool is considered as a product developed and dispersed by existing or newly developed companies spawned by the Center.

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